ENGINEERING TEST REPORT

Multiprotocol Gateway
Model(s): GWY20
FCC ID: XFF-GWY20

Applicant:

MMB Research Inc.
243 College St, Suite 500
Toronto, ON M5T 1R5
Canada

In Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C, Section 15.247
Digital Modulation Systems (DTS) Operating in 2400 – 2483.5 MHz Band

UltraTech's File No.: 18MMBN004_FCC15C247W

This Test report is Issued under the Authority of Tri M. Luu Vice President of Engineering UltraTech Group of Labs Date: November 29, 2018	
Report Prepared by: Dan Huynh Issued Date: November 29, 2018	Tested by: Hung Trinh Test Dates: September 7-24, 2018 November 9, 10, 2018

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.247
Title:	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15 – Radio Frequency Devices
Purpose of Test:	Equipment Certification for Digital Modulation Systems (DTS) Operating Under §15.247
Test Procedures:	▪ ANSI C63.4 ▪ ANSI C63.10 ▪ FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05
Environmental Classification:	[x] Commercial, industrial or business environment [x] Residential environment

1.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

1.3. NORMATIVE REFERENCES

Publication	Year	Title
47 CFR Parts 0-19	2018	Code of Federal Regulations (CFR), Title 47 – Telecommunication
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
FCC, KDB Publication No. 558074 D01 15.247 Meas Guidance v05	2018	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

Applicant	
Name:	MMB Research Inc.
Address:	243 College St, Suite 500 Toronto, ON M5T 1R5 Canada
Contact Person:	Hussein Nagji Phone #: 416-636-3145 x237 Fax #: n/a Email Address: hussein.nagji@mmbnetworks.com

Manufacturer	
Name:	MMB Research Inc.
Address:	243 College St, Suite 500 Toronto, ON M5T 1R5 Canada
Contact Person:	Hussein Nagji Phone #: 416-636-3145 x237 Fax #: n/a Email Address: hussein.nagji@mmbnetworks.com

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	MMB Research Inc.
Product Name:	Multiprotocol Gateway
Model(s):	GWY20
Serial Number:	Test Sample
Type of Equipment:	Digital Transmission System (DTS)
Input Power Supply Type:	5V, 2.4A via AC/DC adapter
Primary User Functions of EUT:	Home automation/ IoT gateway

2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	Mobile Base station (fixed use)
Intended Operating Environment:	Residential environment Commercial, industrial or business environment
Power Supply Requirement:	5V, 2.4A
RF Output Power Rating:	802.11b: 25.86 dBm Peak 802.11g: 26.33 dBm Peak 802.11n: 26.15 dBm Peak
Operating Frequency Range:	2412 - 2462 MHz
RF Output Impedance:	50 Ω
Duty Cycle:	Continuous
Modulation Type:	802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11g/n: OFDM (BPSK / QPSK / 16-QAM / 64-QAM)
Antenna Connector Types:	Integral

2.4. ASSOCIATED ANTENNA DESCRIPTIONS

Antenna Type	Manufacturer	Model	Maximum Gain (dBi)
FPC Dipole	Ethertronics	1001932PT	2.5
FPC Dipole	Airgain	N2420GS	1.6

2.5. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	Ethernet	1	RJ-45	Non-shielded
2	USB	1	USB	Shielded
3	DC Power Jack	1	DC Barrel Power Jack	Non-shielded

2.6. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Description:	Laptop
Brand name:	Lenovo
Model Name or Number:	ThinkPad Edge 0578
Serial Number:	IS057882 ULRBXKBG
Connected to EUT's Port:	Connected to Router

Ancillary Equipment # 2	
Description:	Router
Brand name:	D-Link
Model Name or Number:	DIR-615
Serial Number:	F3HR181012581
Connected to EUT's Port:	Ethernet

Ancillary Equipment # 3	
Description:	AC/DC Adapter
Brand name:	I.T.E Power Supply
Model Name or Number:	RH-050240US
Serial Number:	--
Connected to EUT's Port:	DC Jack

EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21 to 23 ^{o}C
Humidity:	45 to 58%
Pressure:	102 kPa
Power Input Source:	5V via AC/DC adapter

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	The transmitter was operated in a continuous transmission mode with the carrier modulated as specified in the Test Data.
Special Test Software:	Test software provided by the Applicant to operate the EUT at each channel frequency continuously and in the range of typical modes of operation.
Special Hardware Used:	N/A
Transmitter Test Antenna:	The EUT is tested with the antenna fitted in a manner typical of normal intended use as integral antenna equipment as described with the test results.

Transmitter Test Signals	
Frequency Band(s):	2412 - 2462 MHz
Frequency(ies) Tested:	2412 MHz, 2417 MHz, 2422 MHz, 2427MHz, 2432 MHz, 2437 MHz, 2442 MHz, 2447 MHz, 2452 MHz, 2457 MHz, 2462 MHz
RF Power Output: (measured maximum output power at antenna terminals) **Normal Test Modulation:** **Modulating Signal Source:**	802.11b: 25.86 dBm Peak 802.11g: 26.33 dBm Peak 802.11n: 26.15 dBm Peak DSSS / OFDM Internal

EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(H).

- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with ANAB File No.: AT-1945.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Compliance (Yes/No)
15.203	Antenna requirements	Yes*
15.207(a)	AC Power Line Conducted Emissions	Yes
15.247(a)(2)	6 dB Bandwidth	Yes
15.247(b)(3)	Peak Conducted Output Power	Yes
15.247(d)	Band-Edge and RF Conducted Spurious Emissions at the Transmitter Antenna Terminal	Yes
15.247(d), 15.209 & 15.205	Transmitter Spurious Radiated Emissions	Yes
15.247(e)	Power Spectral Density	Yes
15.247(i), 1.1307, 1.1310, 2.1091	RF Exposure	Yes

* The EUT complies with the requirement; it employs a unique (non-standard) antenna connector or integral antenna.

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

EXHIBIT 5. TEST DATA

5.1. POWER LINE CONDUCTED EMISSIONS [§15.207(a)]

5.1.1. Limit(s)

The equipment shall meet the limits of the following table:

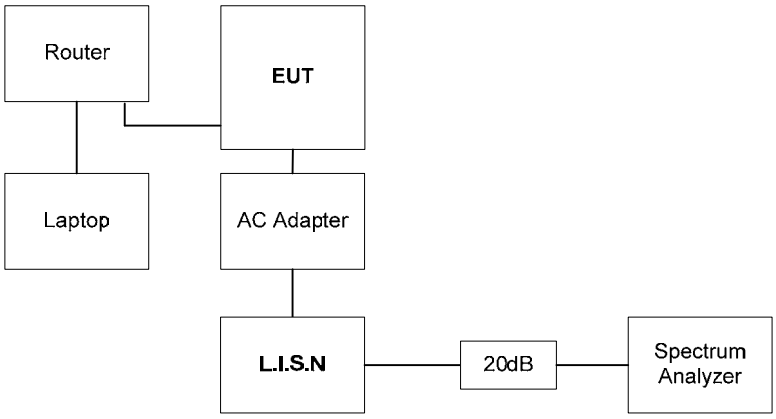
Frequency of emission (MHz)	Conducted Limits (dBμV)	
	Quasi-peak	Average
0.15–0.5 .....……..	66 to 56*	56 to 46*
0.5–5 .....……..	56	46
5-30 ……..	60 ..……..	50

*Decreases linearly with the logarithm of the frequency

5.1.2. Method of Measurements

ANSI C63.4

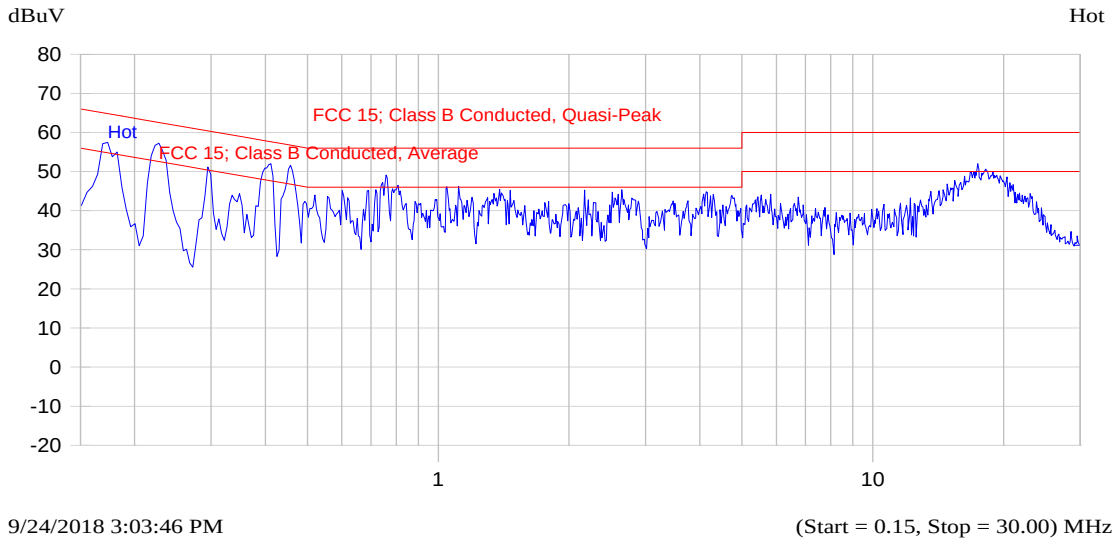
5.1.3. Test Arrangement



5.1.4. Test Data

Plot 5.1.4.1. Power Line Conducted Emissions (Tx Mode, 802.11b 1Mbps, Ch 6, 2437MHz)
Line Voltage: 120 VAC; Line Tested: Hot

Current Graph

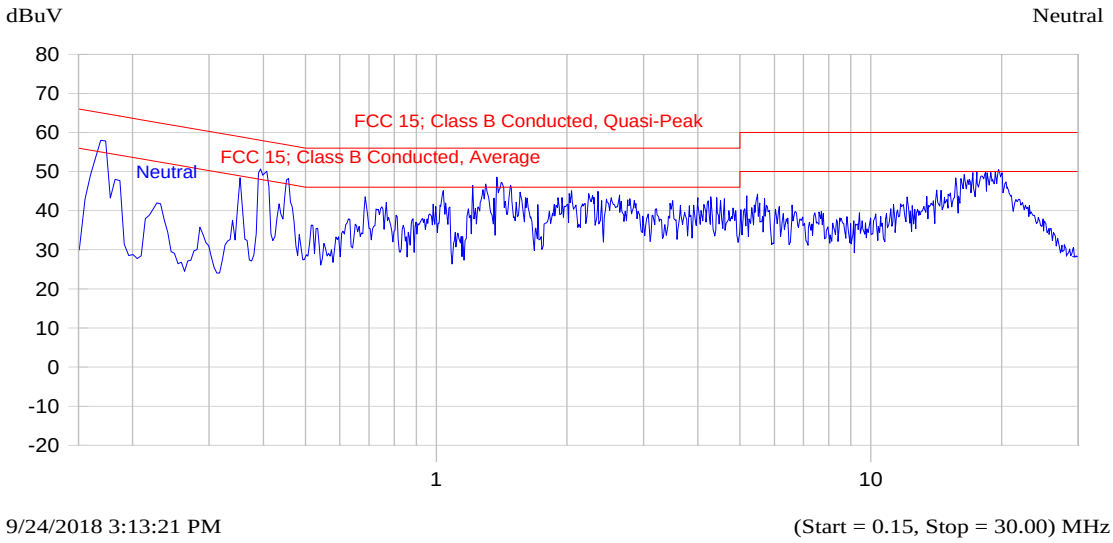


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.166	61.4	58.2	-7.0	47.4	-7.7	Hot
0.232	56.7	52.4	-10.0	42.1	-10.2	Hot
0.287	54.0	47.0	-13.6	33.1	-17.5	Hot
0.408	54.1	49.4	-8.3	37.7	-10.0	Hot
0.465	54.2	49.9	-6.7	38.1	-8.5	Hot
0.760	50.3	45.0	-11.0	31.5	-14.5	Hot
1.115	48.6	42.9	-13.1	32.5	-13.5	Hot
17.446	50.5	45.0	-15.0	35.6	-14.4	Hot

Plot 5.1.4.2. Power Line Conducted Emissions (Tx Mode, 802.11b 1Mbps, Ch 6, 2437MHz)
Line Voltage: 120 VAC Line Tested: Neutral

Current Graph

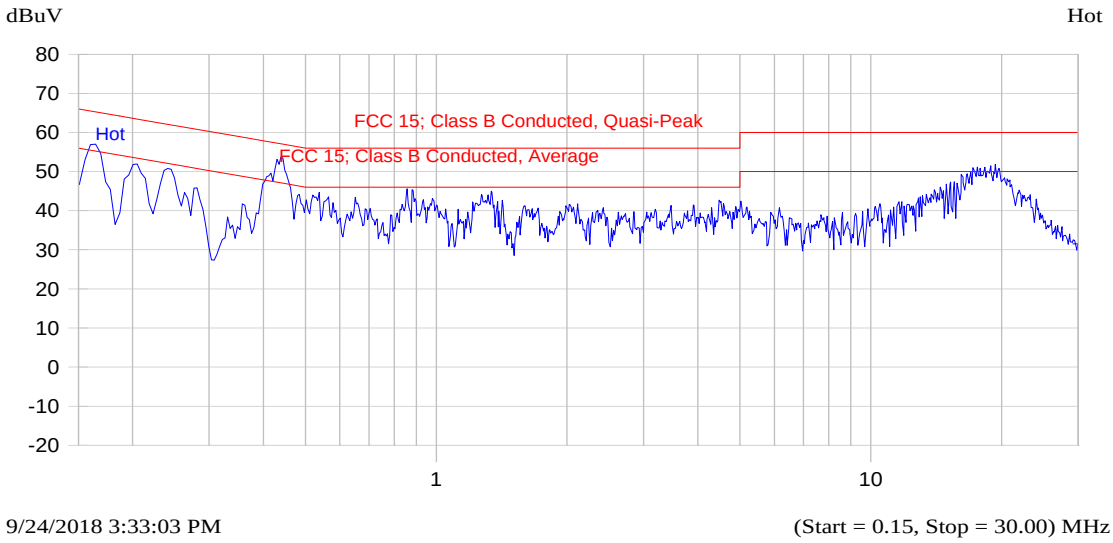


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.170	63.8	57.9	-7.1	40.4	-14.5	Neutral
0.389	52.8	46.6	-11.5	34.4	-13.7	Neutral
0.469	50.1	34.6	-21.9	28.6	-18.0	Neutral
1.378	50.1	45.2	-10.8	34.1	-11.9	Neutral

Plot 5.1.4.3. Power Line Conducted Emissions (Rx Mode, 802.11b 1Mbps, Ch 6, 2437MHz)
Line Voltage: 120 VAC; Line Tested: Hot

Current Graph

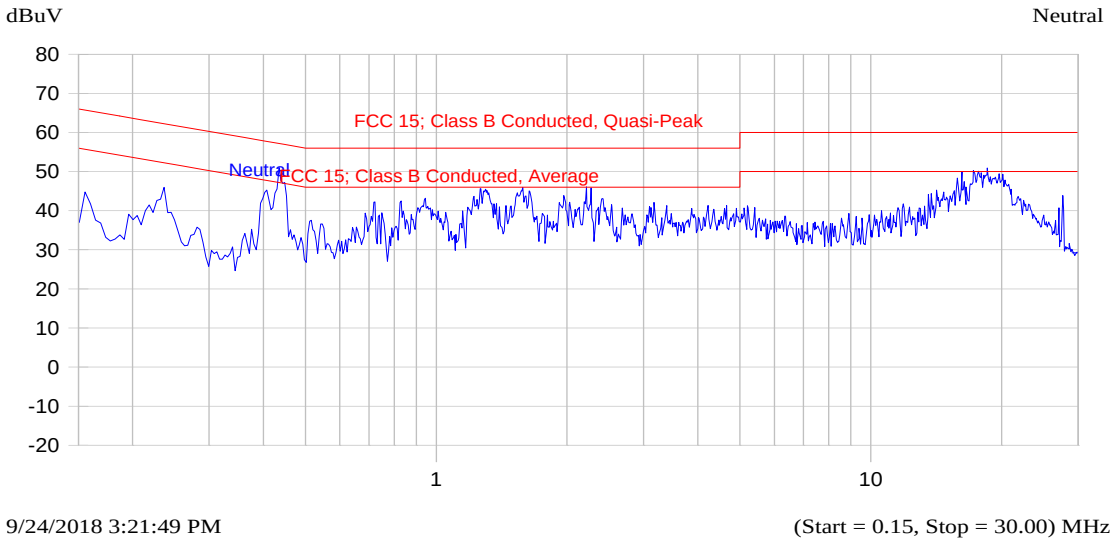


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.164	56.5	52.5	-12.7	42.8	-12.4	Hot
0.235	51.2	48.7	-13.6	41.2	-11.0	Hot
0.440	53.5	50.3	-6.7	41.3	-5.8	Hot
0.867	45.4	40.9	-15.1	31.2	-14.8	Hot
18.874	50.5	46.2	-13.8	36.0	-14.0	Hot

Plot 5.1.4.4. Power Line Conducted Emissions (Rx Mode, 802.11b 1Mbps, Ch 6, 2437MHz)
Line Voltage: 120 VAC; Line Tested: Neutral

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.432	50.3	45.2	-12.0	35.0	-12.2	Neutral
1.262	45.5	42.1	-13.9	32.1	-13.9	Neutral
1.581	45.8	40.8	-15.2	31.2	-14.8	Neutral
2.216	40.6	33.6	-22.4	24.4	-21.6	Neutral

5.2. OCCUPIED BANDWIDTH [§ 15.247(a)(2)]

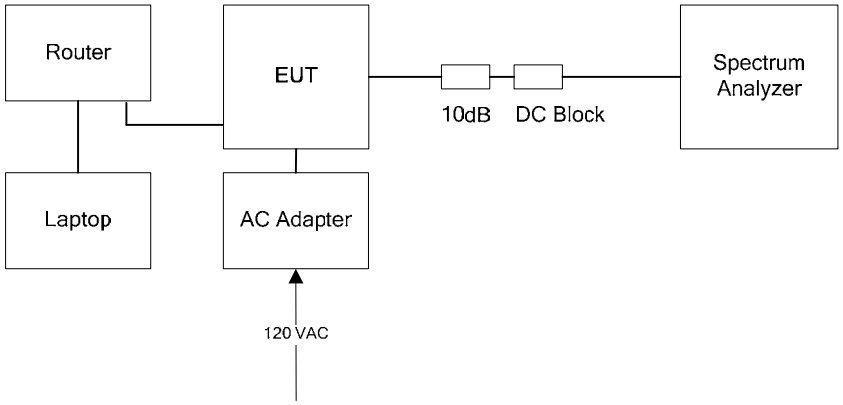
5.2.1. Limit(s)

The minimum 6 dB bandwidth shall be at least 500 kHz.

5.2.2. Method of Measurements

FCC KDB 558074 D01 15.247 Meas Guidance v05, Section 8.2 DTS Bandwidth / ANSI C63.10 Subclause 11.8.1 Option 1.

5.2.3. Test Arrangement

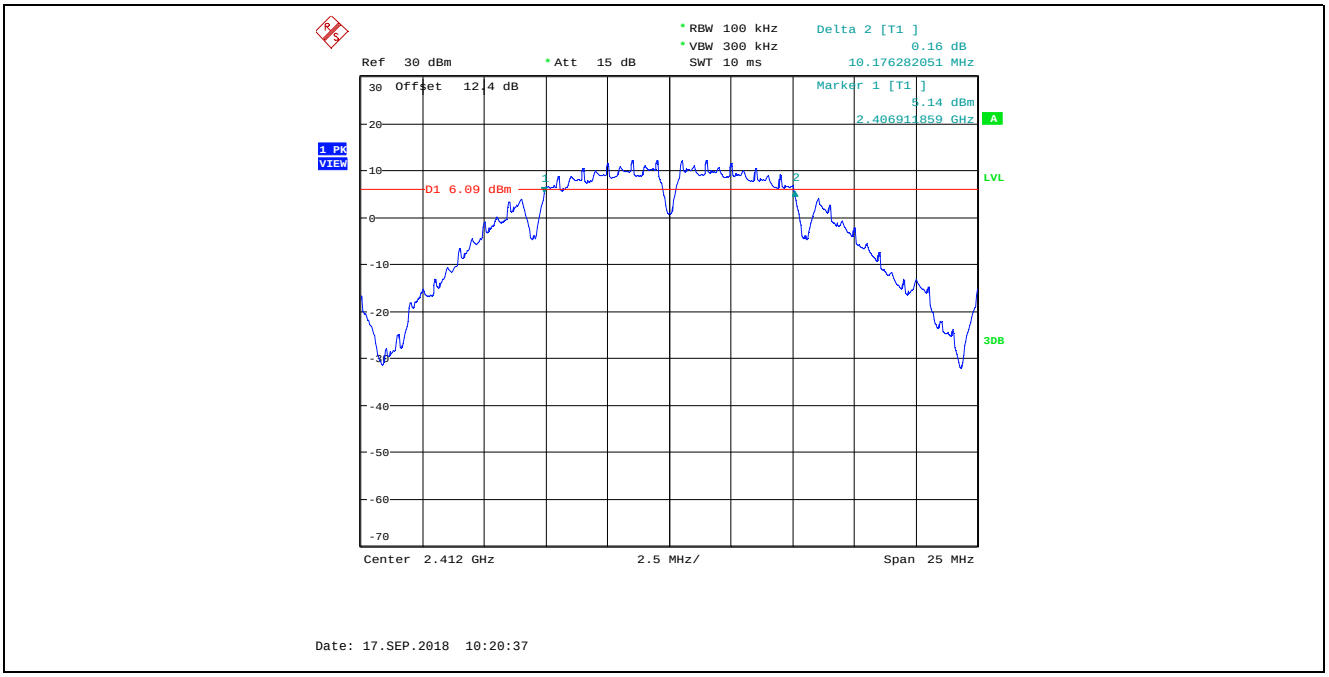


5.2.4. Test Data

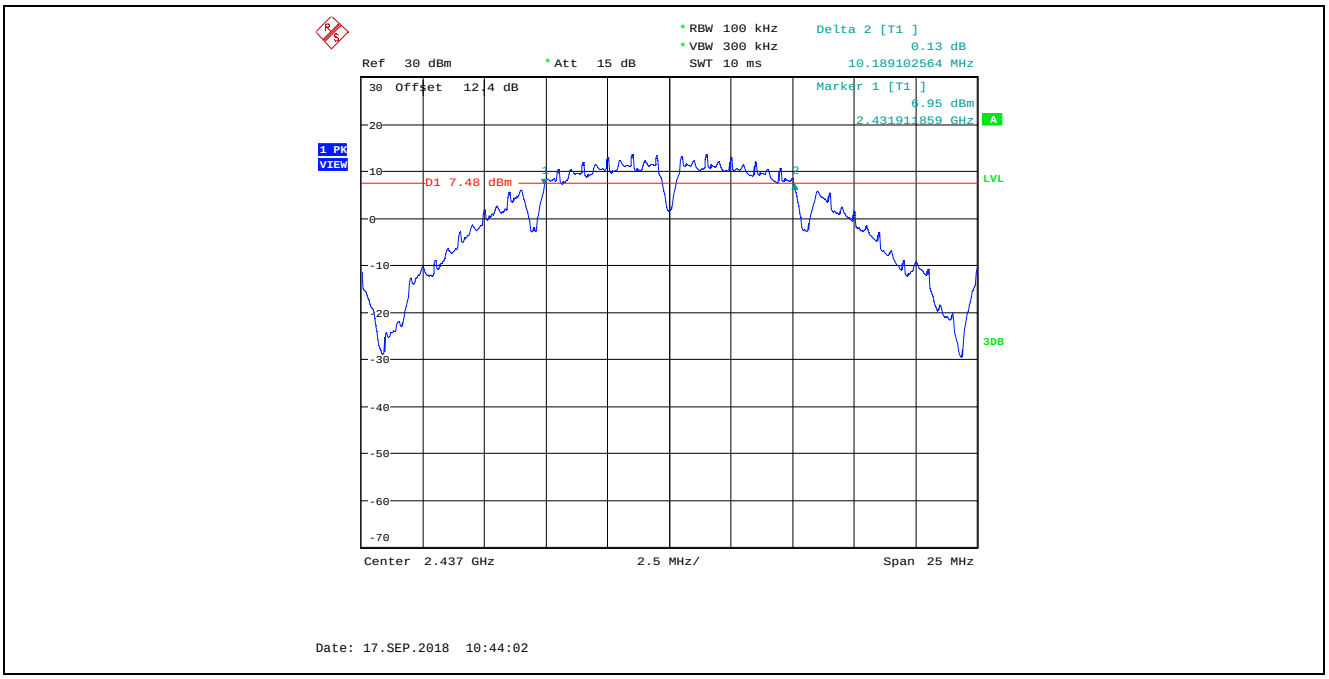
Operating Mode		Power Setting	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (kHz)
802.11b	1 Mbps DBPSK	26	2412	10.18	500
		30	2437	10.19	500
		25	2462	10.18	500
	2 Mbps DQPSK	26	2412	10.18	500
		30	2437	10.19	500
		25	2462	10.18	500
	11 Mbps CCK	26	2412	9.98	500
		30	2437	10.39	500
		25	2462	9.94	500

Operating Mode		Power Setting	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (kHz)
802.11g	9 Mbps BPSK	21	2412	16.65	500
		30	2437	16.60	500
		20	2462	16.66	500
	18 Mbps QPSK	21	2412	16.66	500
		30	2437	16.60	500
		20	2462	16.60	500
	36 Mbps 16-QAM	21	2412	16.66	500
		30	2437	16.60	500
		20	2462	16.66	500
	54 Mbps 64-QAM	21	2412	16.65	500
		30	2437	16.60	500
		20	2462	16.66	500
802.11n	MCS0	19	2412	17.88	500
		30	2437	17.88	500
		20	2462	17.88	500
	MCS2	19	2412	17.88	500
		30	2437	17.88	500
		20	2462	17.88	500
	MCS4	19	2412	17.88	500
		30	2437	17.88	500
		20	2462	17.88	500
	MCS7	19	2412	17.88	500
		30	2437	17.88	500
		20	2462	17.88	500

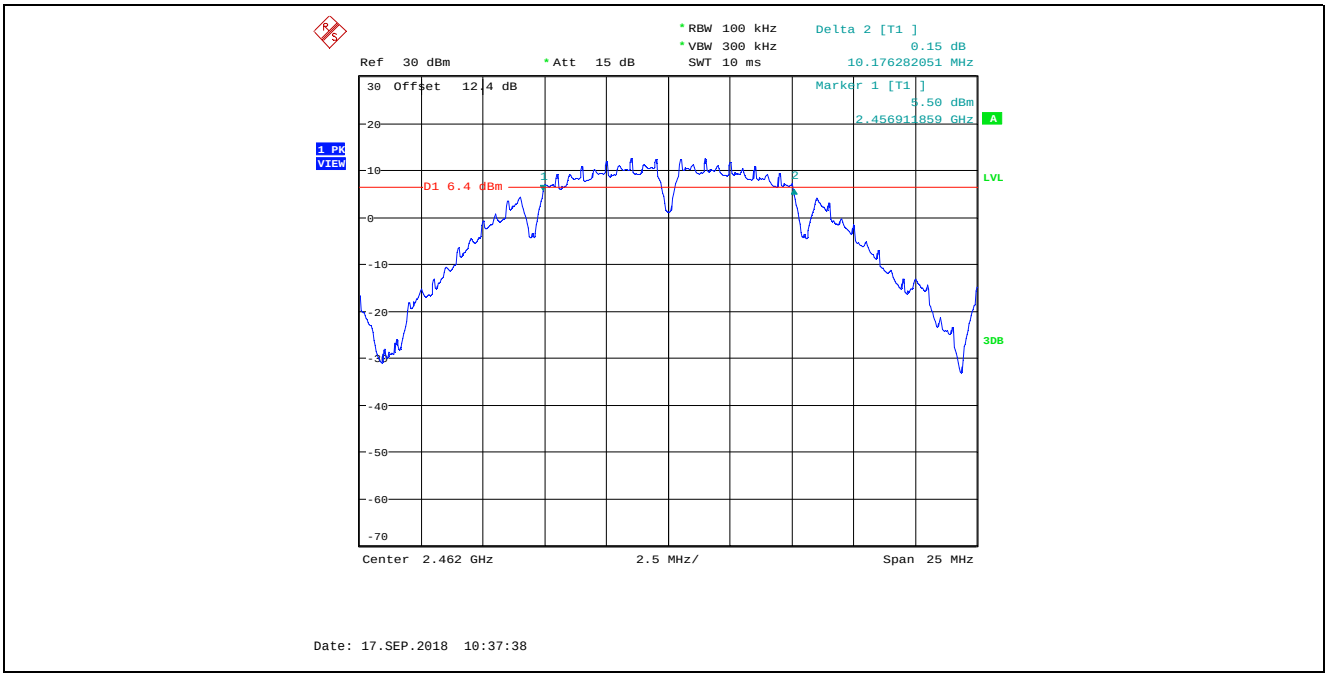
Plot 5.2.4.1. 6 dB Bandwidth
802.11b, 1 Mbps DBPSK, Power Setting 26, Channel 1, 2412 MHz



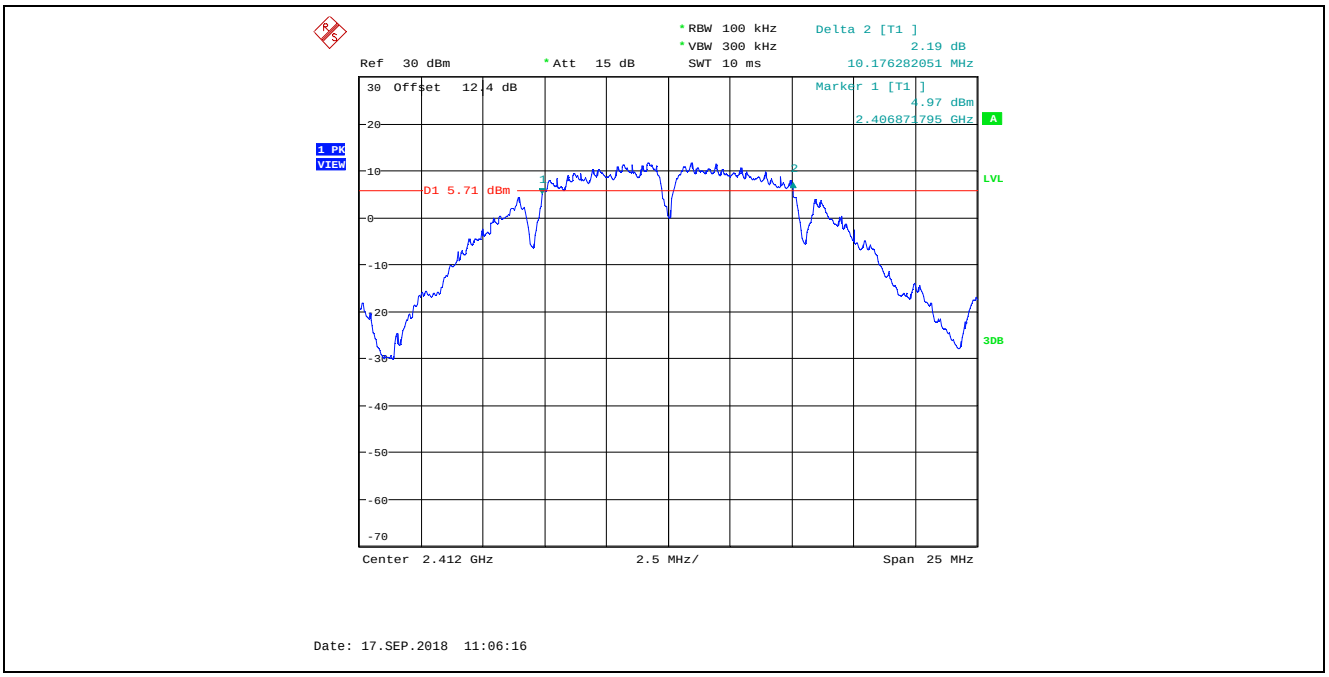
Plot 5.2.4.2. 6 dB Bandwidth
802.11b, 1 Mbps DBPSK, Power Setting 30, Channel 6, 2437 MHz



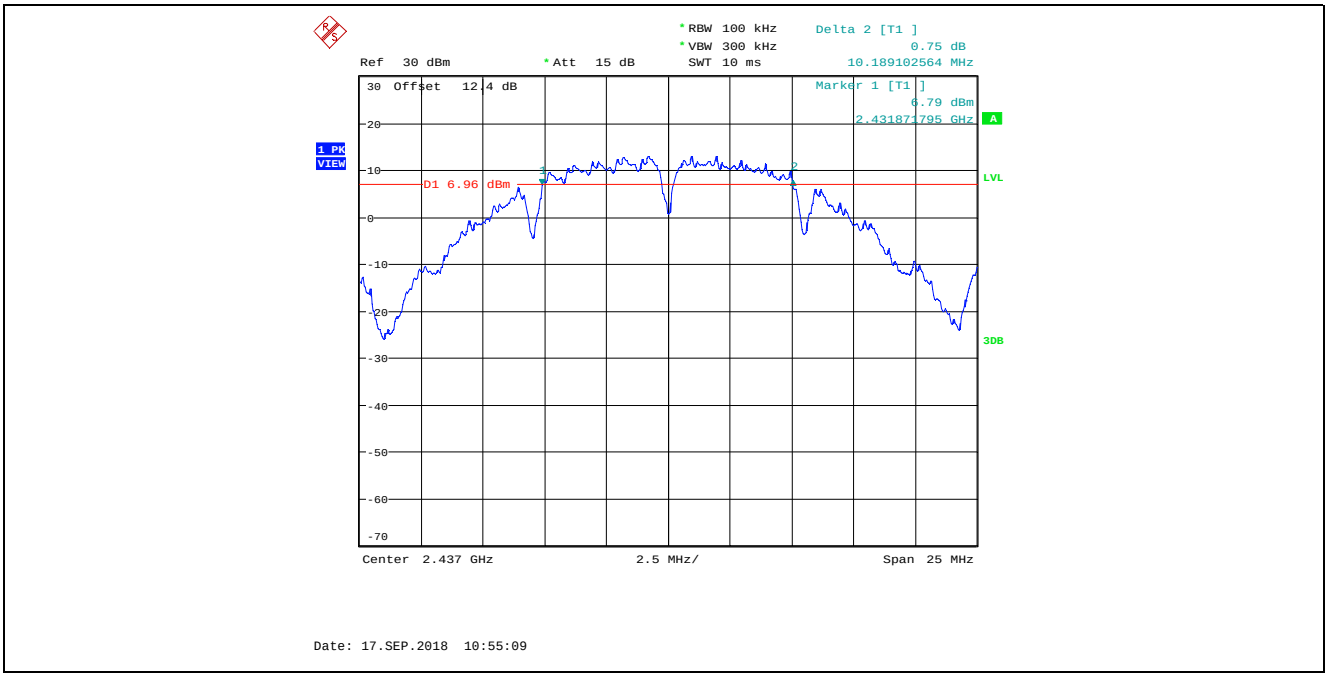
Plot 5.2.4.3. 6 dB Bandwidth
802.11b, 1 Mbps DBPSK, Power Setting 25, Channel 11, 2462 MHz



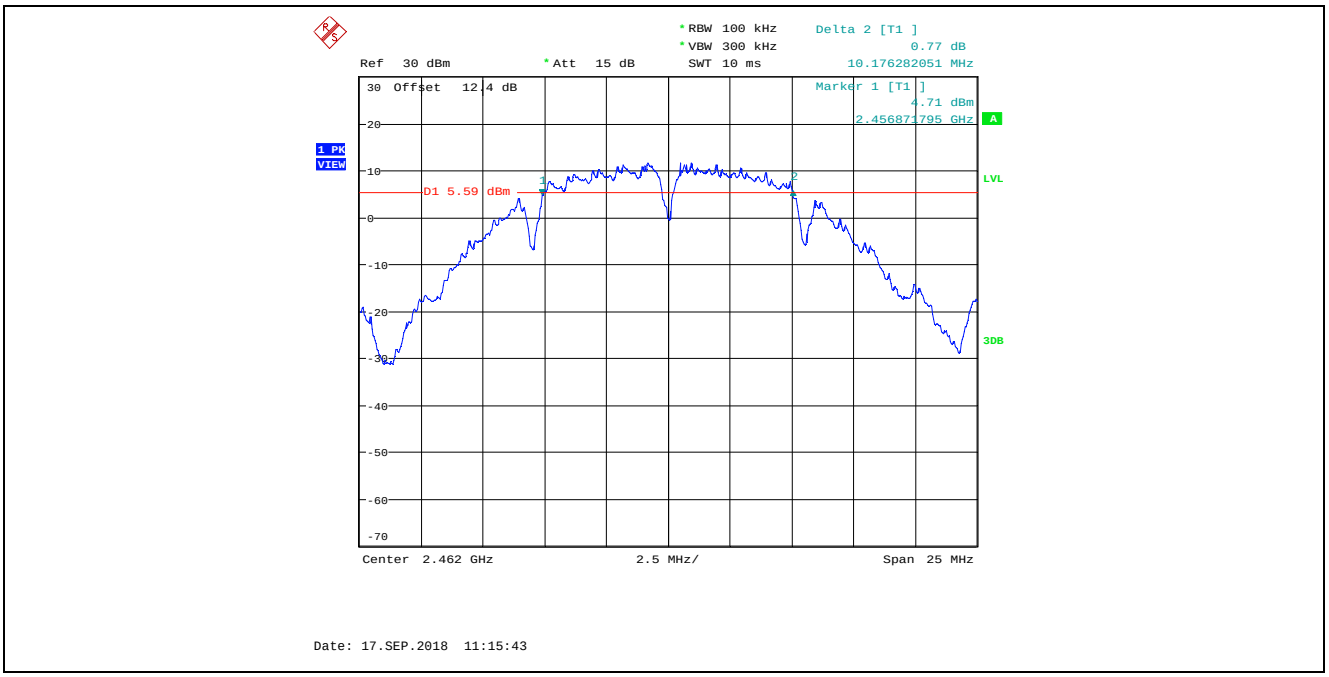
Plot 5.2.4.4. 6 dB Bandwidth
802.11b, 2 Mbps DQPSK, Power Setting 26, Channel 1, 2412 MHz,



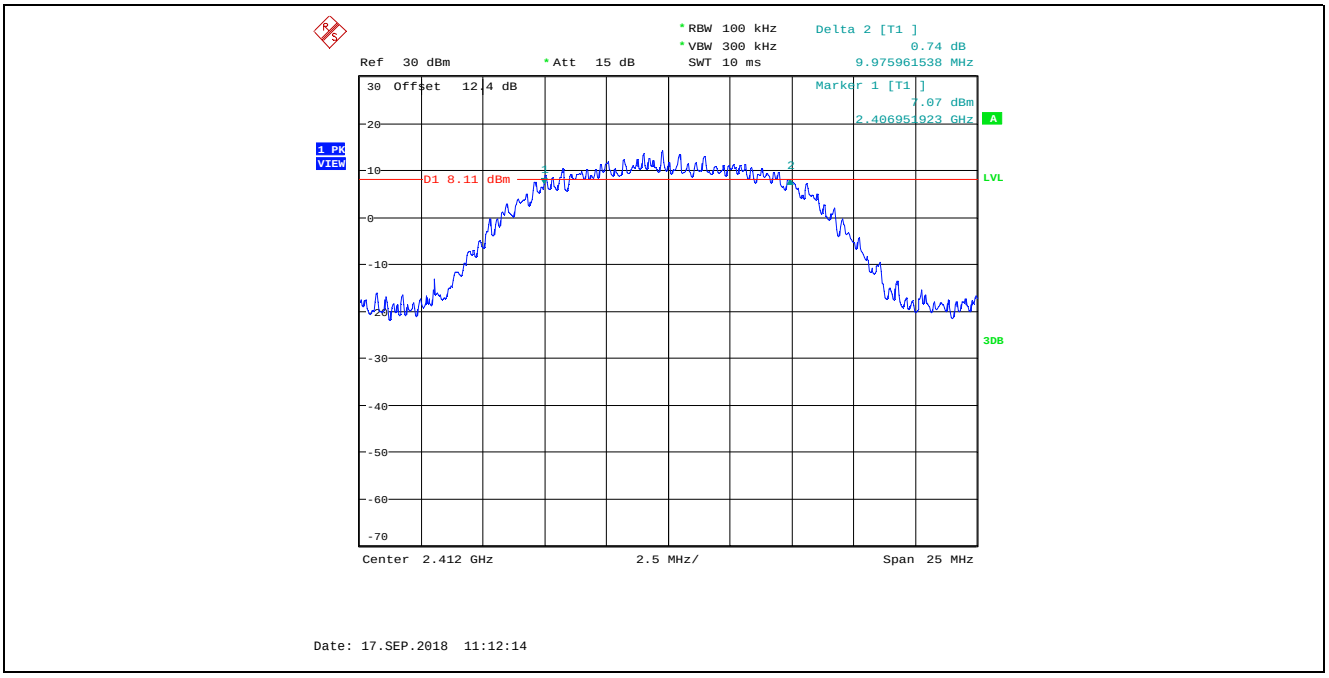
Plot 5.2.4.5. 6 dB Bandwidth
802.11b, 2 Mbps DQPSK, Power Setting 30, Channel 6, 2437 MHz,



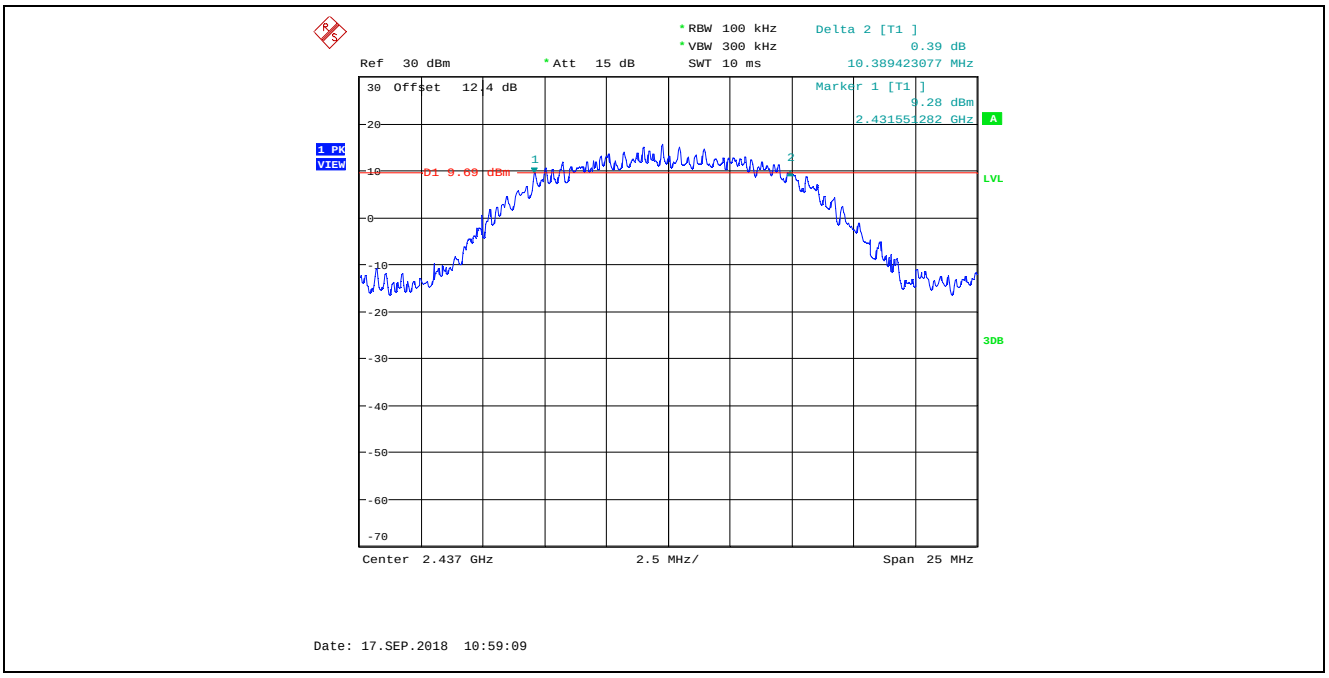
Plot 5.2.4.6. 6 dB Bandwidth
802.11b, 2 Mbps DQPSK, Power Setting 25, Channel 11, 2462 MHz,



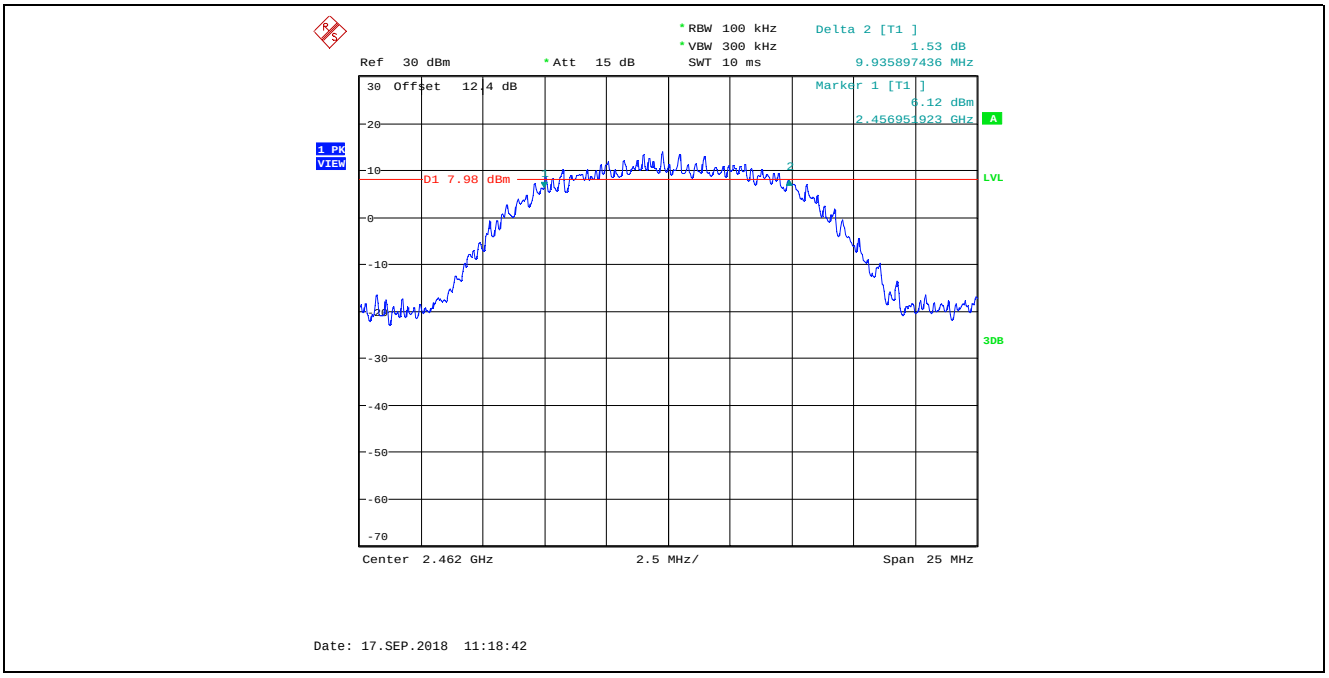
Plot 5.2.4.7. 6 dB Bandwidth
802.11b, 11 Mbps CCK, Power Setting 26, Channel 1, 2412 MHz



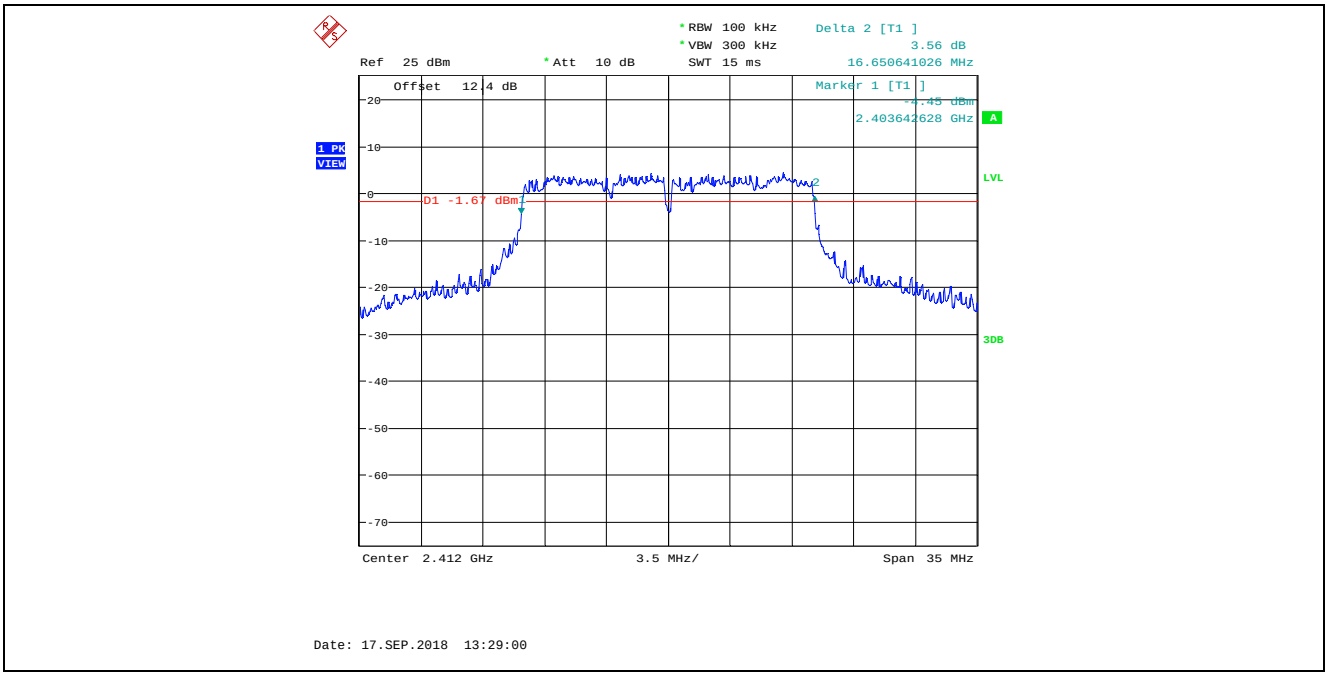
Plot 5.2.4.8. 6 dB Bandwidth
802.11b, 11 Mbps CCK, Power Setting 30, Channel 6, 2437 MHz



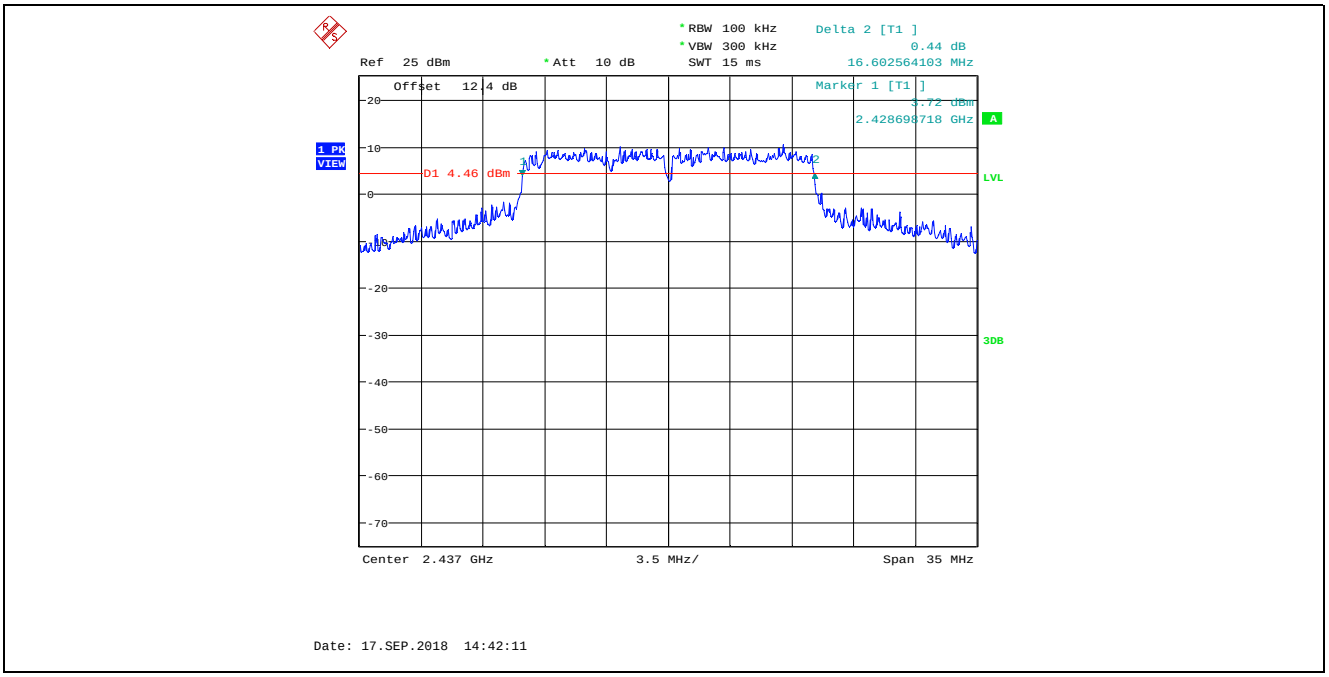
Plot 5.2.4.9. 6 dB Bandwidth
802.11b, 11 Mbps CCK, Power Setting 25, Channel 11, 2462 MHz



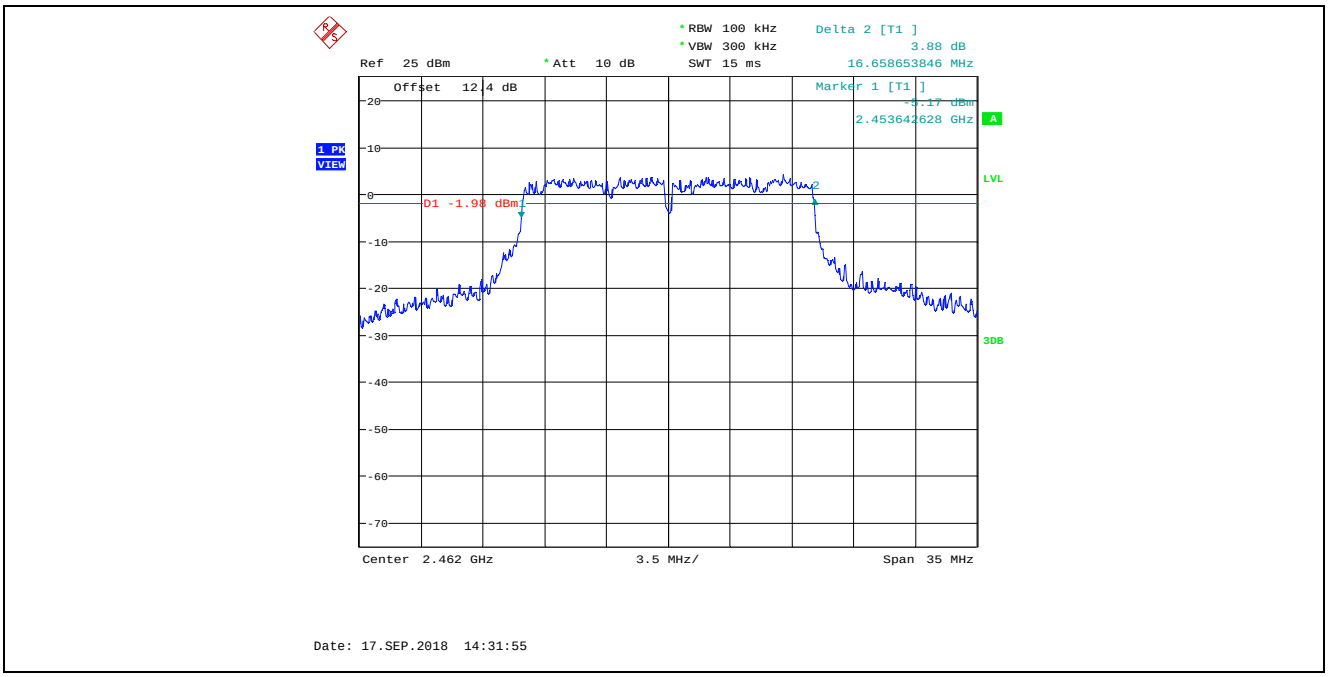
Plot 5.2.4.10. 6 dB Bandwidth
802.11g, 9 Mbps BPSK, Power Setting 21, Channel 1, 2412 MHz



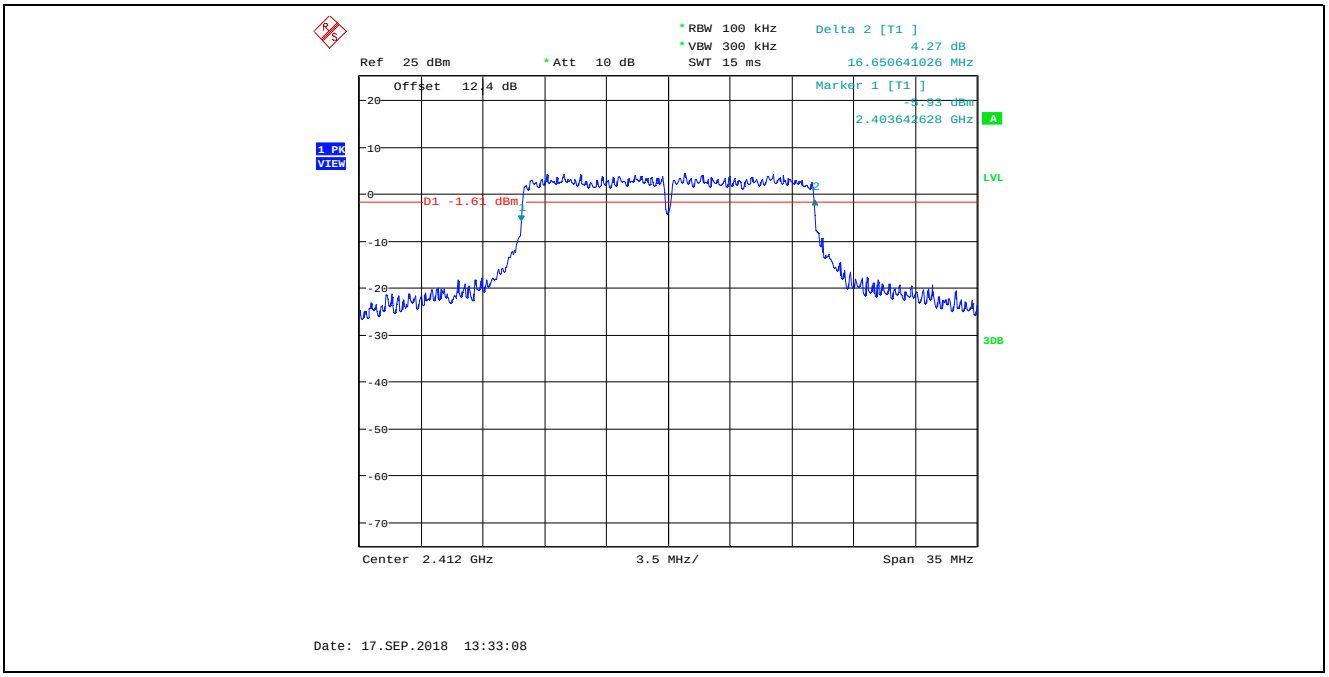
Plot 5.2.4.11. 6 dB Bandwidth
802.11g, 9 Mbps BPSK, Power Setting 30, Channel 6, 2437 MHz



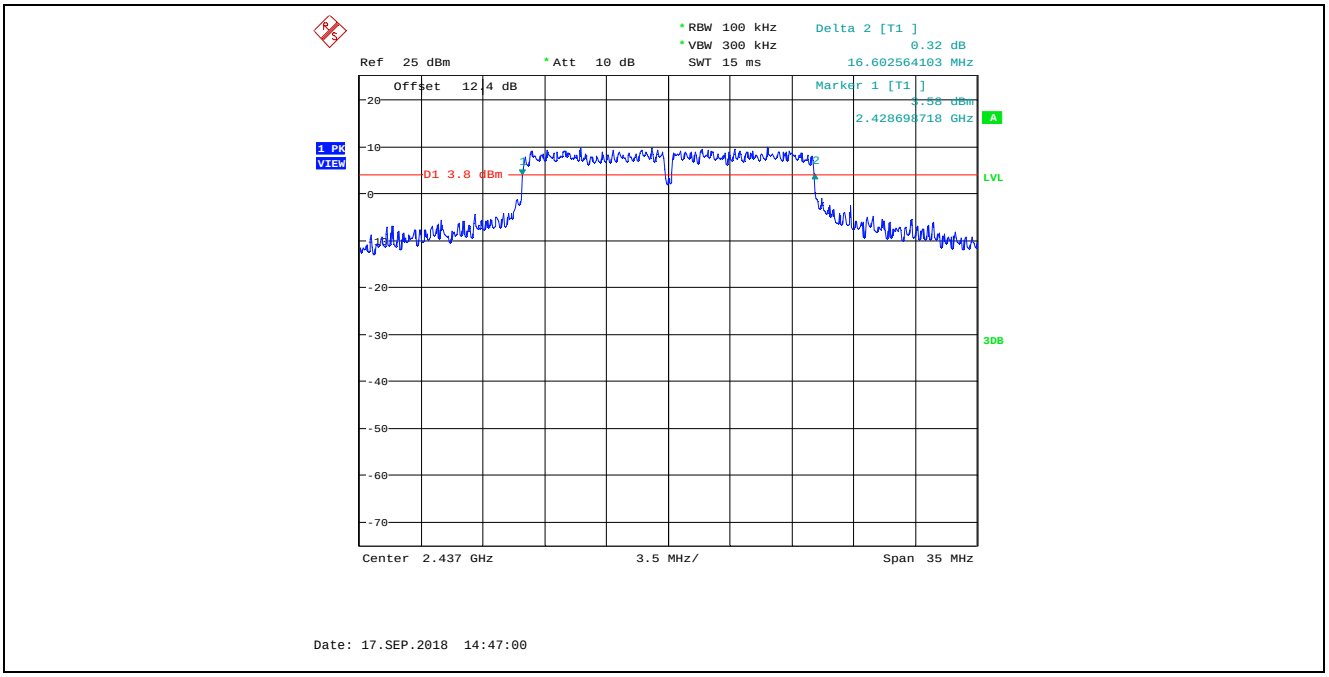
Plot 5.2.4.12. 6 dB Bandwidth
802.11g, 9 Mbps BPSK, Power Setting 20, Channel 11, 2462 MHz



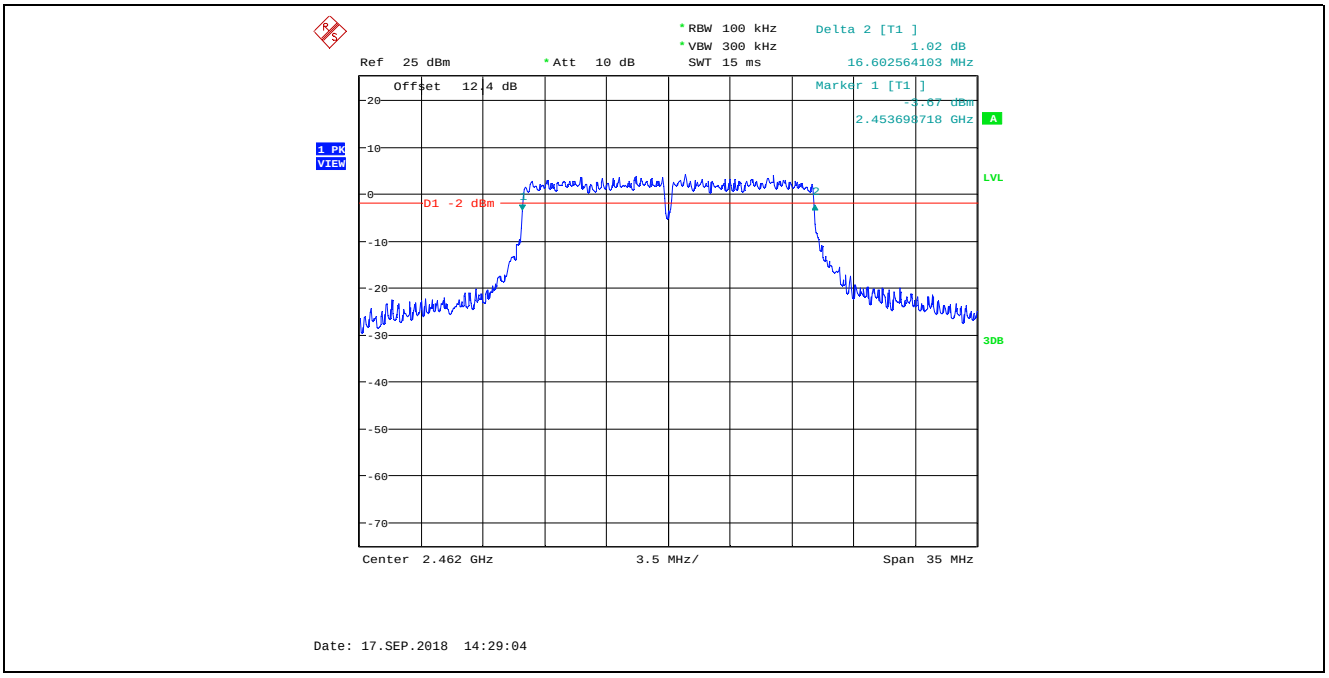
Plot 5.2.4.13. 6 dB Bandwidth
802.11g, 18 Mbps QPSK, Power Setting 21, Channel 1, 2412 MHz



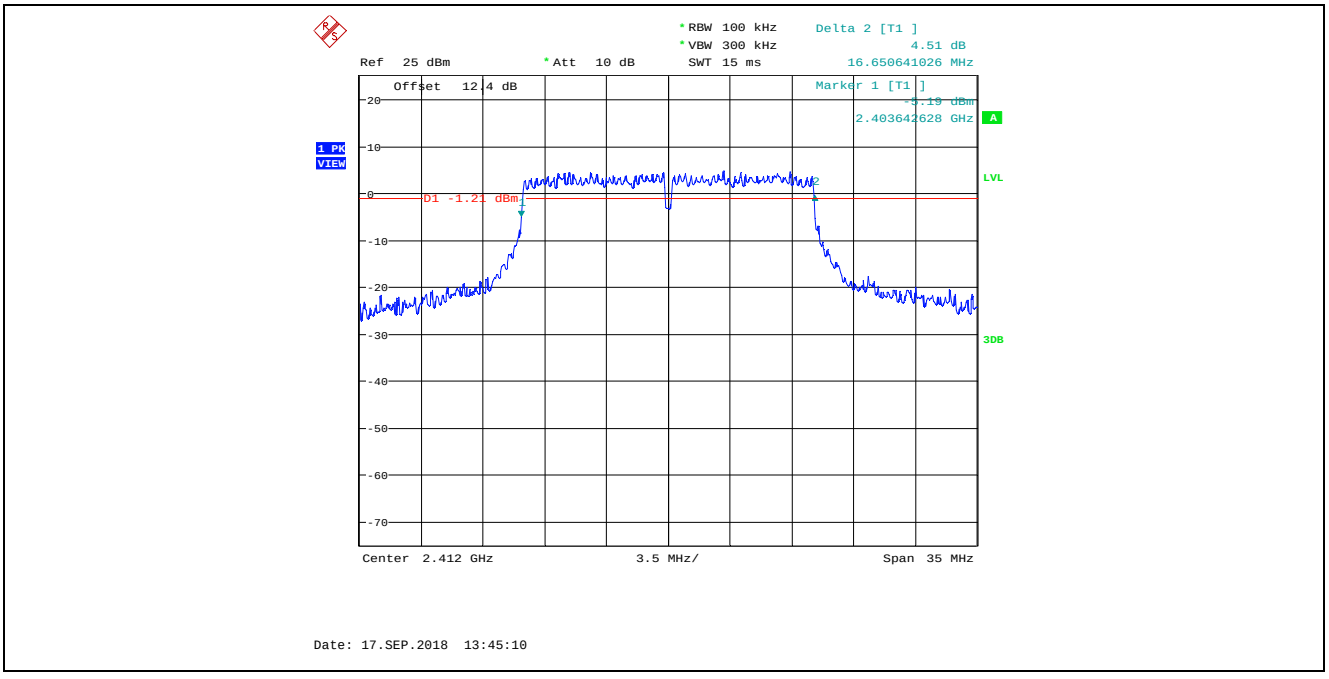
Plot 5.2.4.14. 6 dB Bandwidth
802.11g, 18 Mbps QPSK, Power Setting 30, Channel 6, 2437 MHz



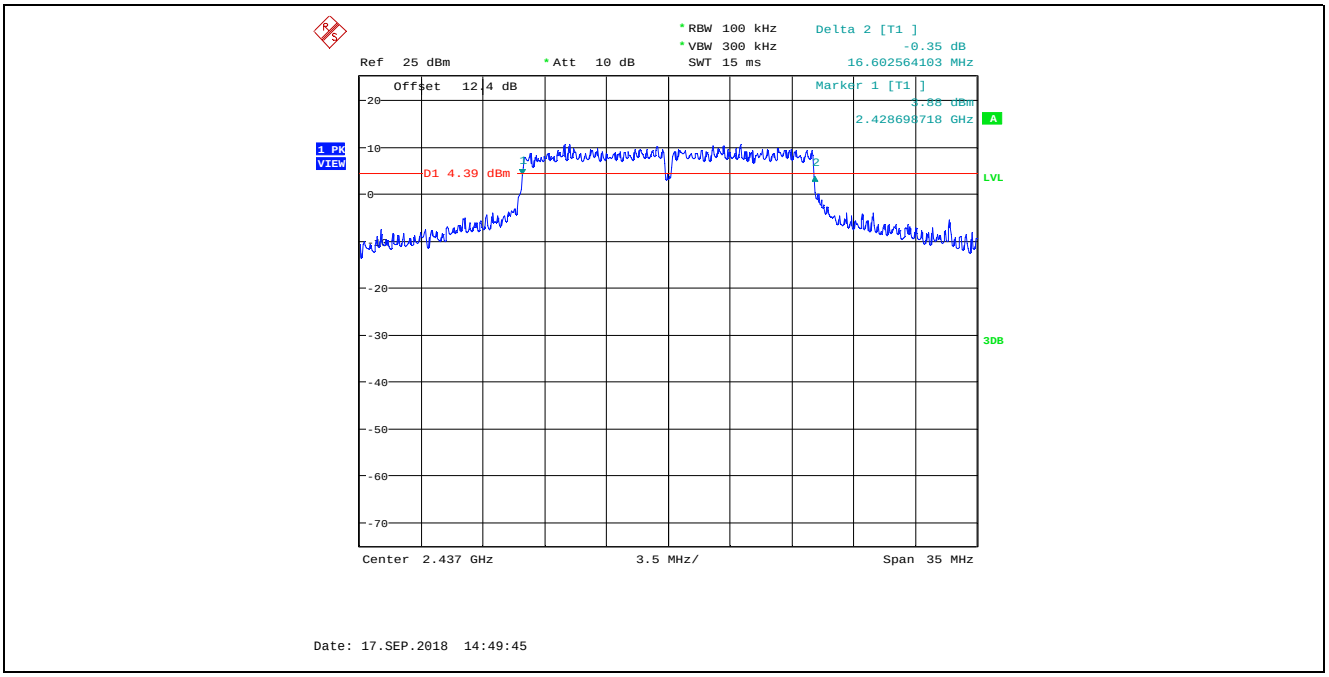
Plot 5.2.4.15. 6 dB Bandwidth
802.11g, 18 Mbps QPSK, Power Setting 20, Channel 11, 2462 MHz



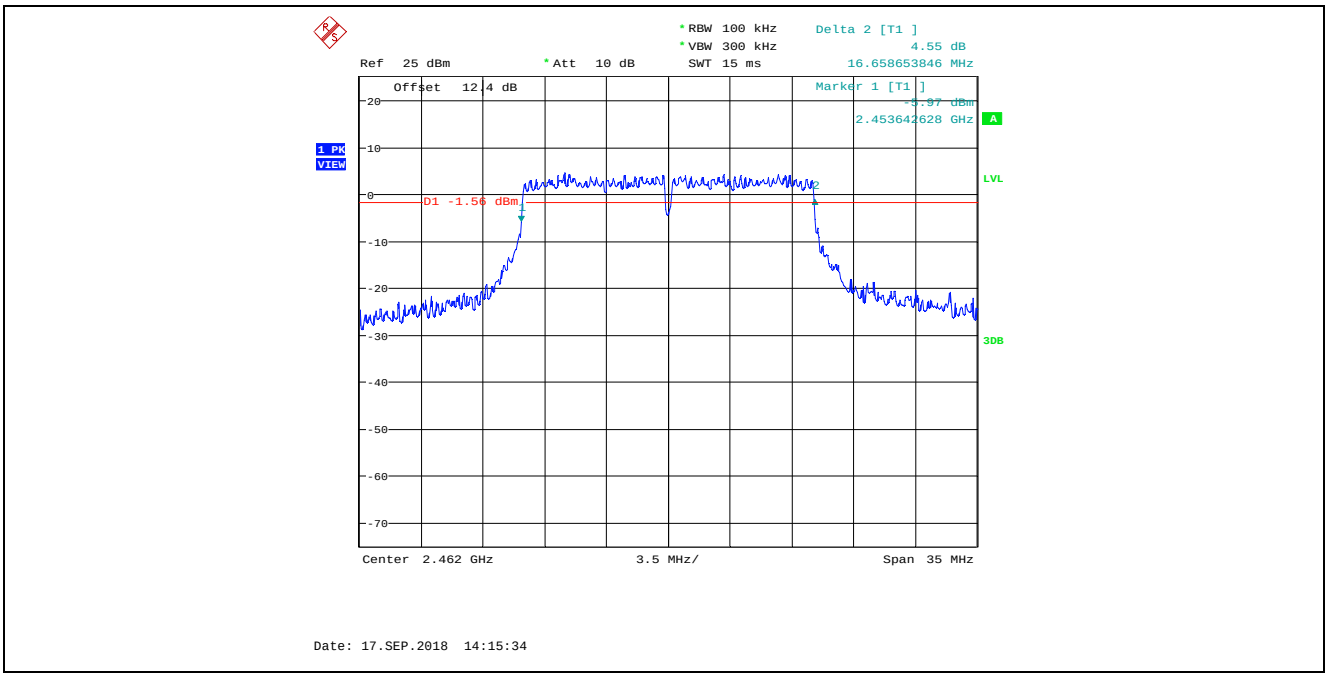
Plot 5.2.4.16. 6 dB Bandwidth
802.11g, 36 Mbps 16-QAM, Power Setting 21, Channel 1, 2412 MHz



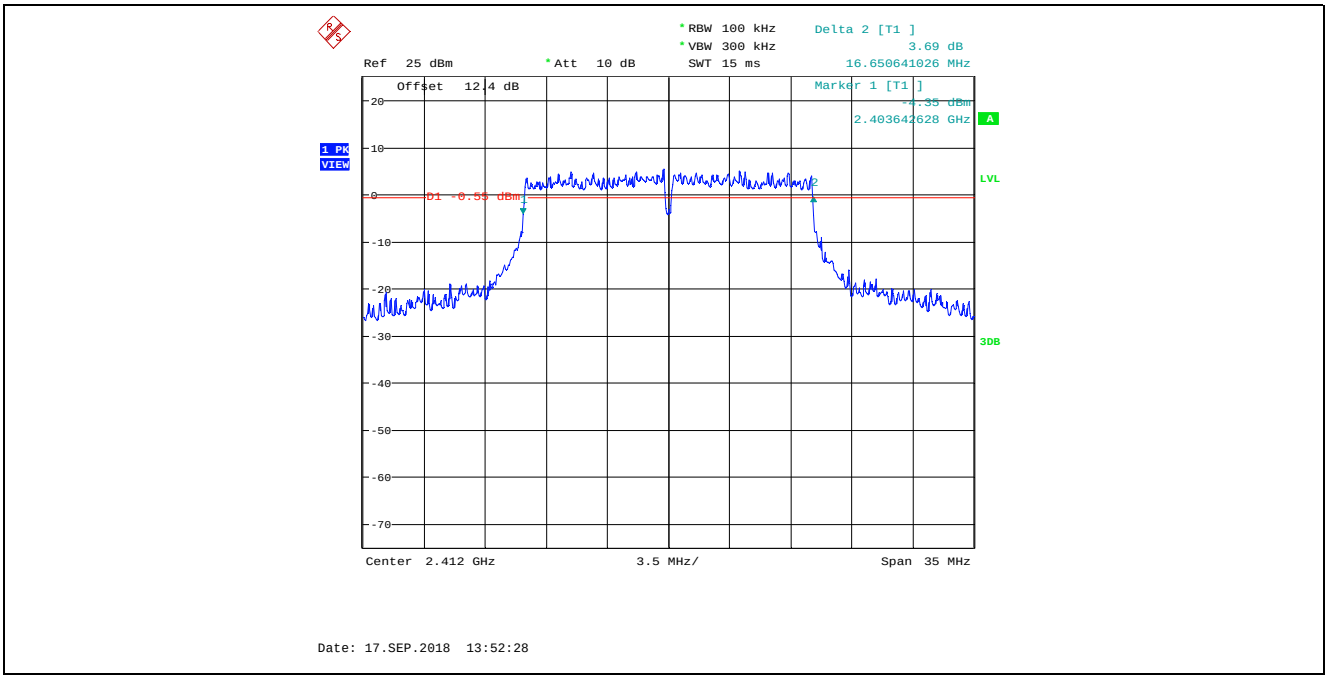
Plot 5.2.4.17. 6 dB Bandwidth
802.11g, 36 Mbps 16-QAM, Power Setting 30, Channel 6, 2437 MHz



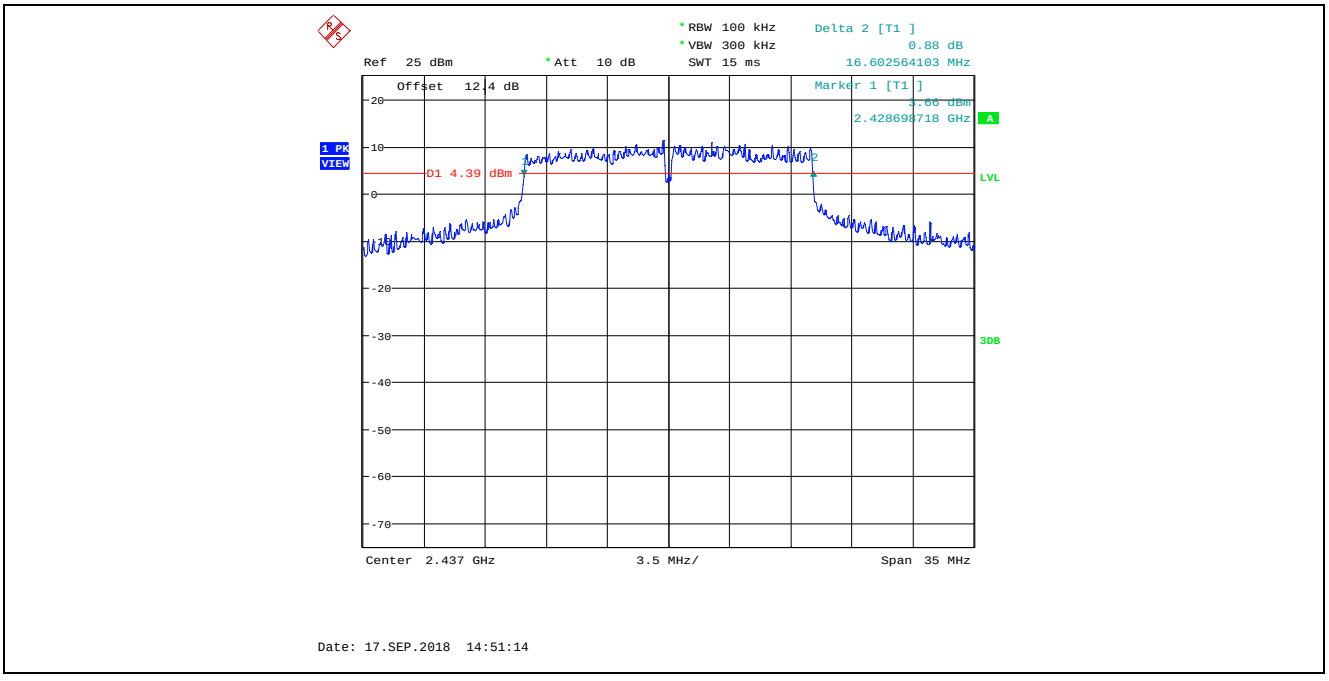
Plot 5.2.4.18. 6 dB Bandwidth
802.11g, 36 Mbps 16-QAM, Power Setting 20, Channel 11, 2462 MHz



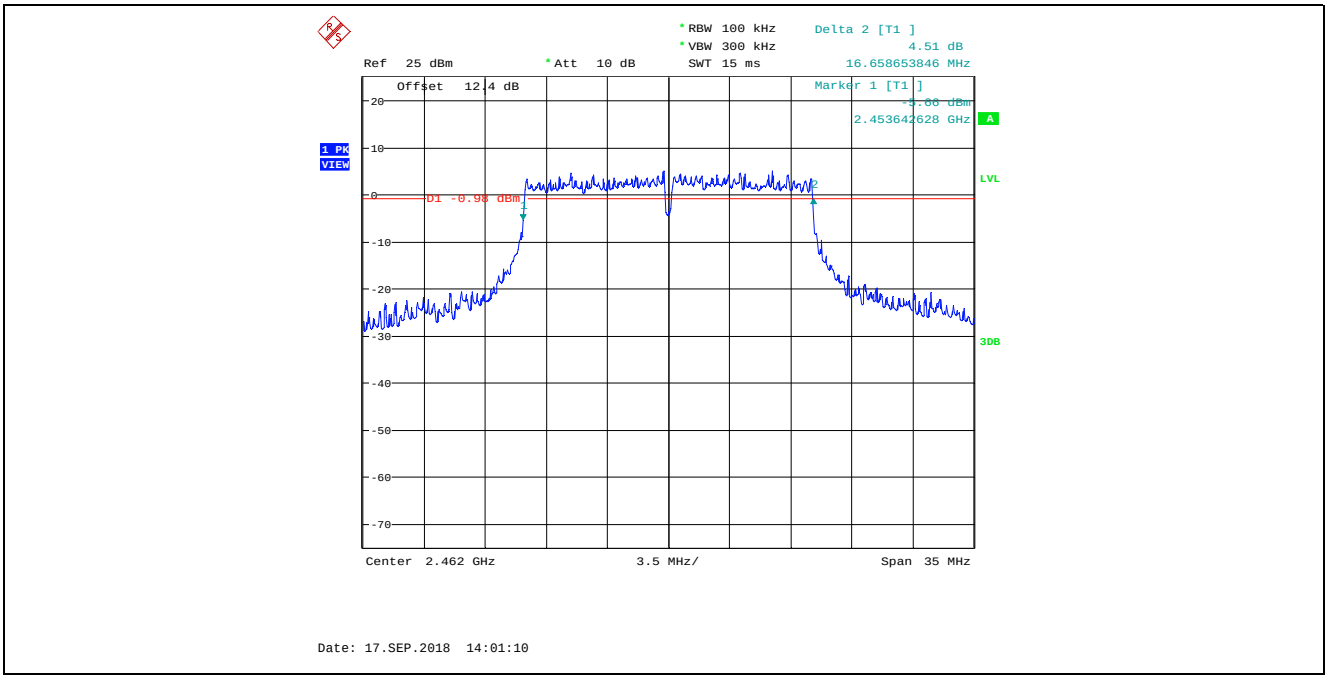
Plot 5.2.4.19. 6 dB Bandwidth
802.11g, 54 Mbps 64-QAM, Power Setting 21, Channel 1, 2412 MHz



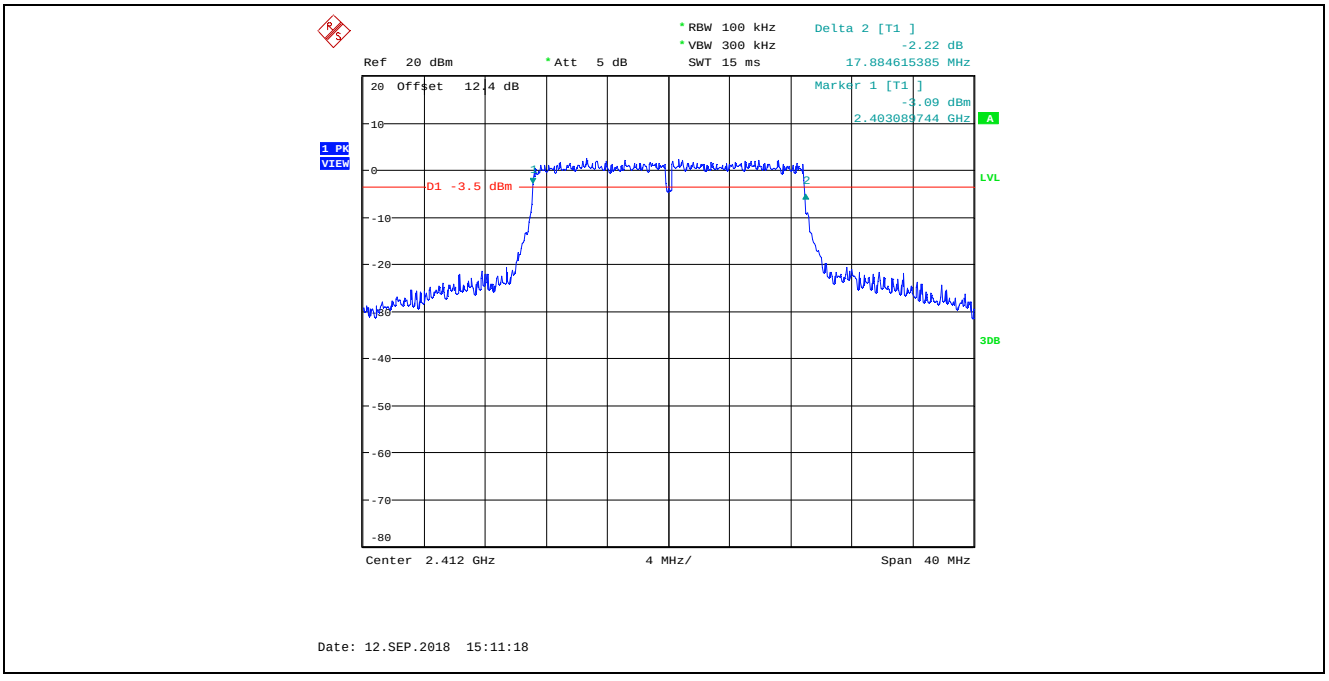
Plot 5.2.4.20. 6 dB Bandwidth
802.11g, 54 Mbps 64-QAM, Power Setting 30, Channel 6, 2437 MHz



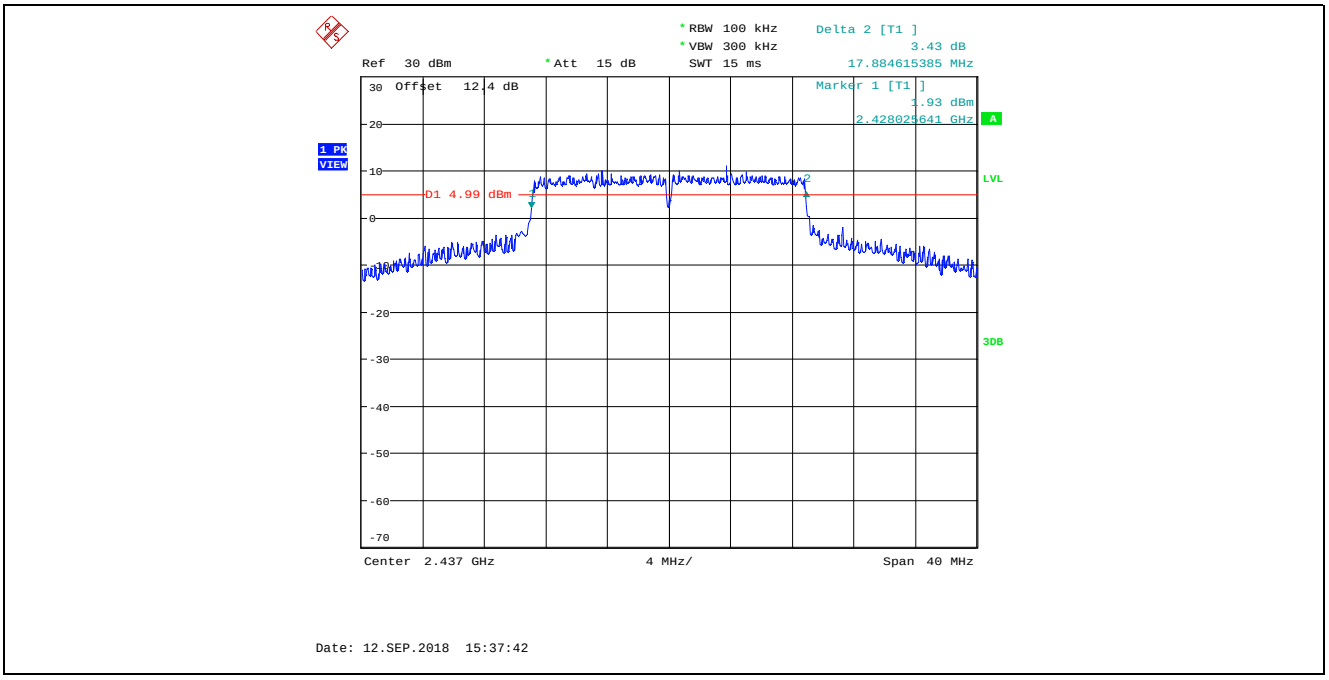
Plot 5.2.4.21. 6 dB Bandwidth
802.11g, 54 Mbps 64-QAM, Power Setting 20, Channel 11, 2462 MHz



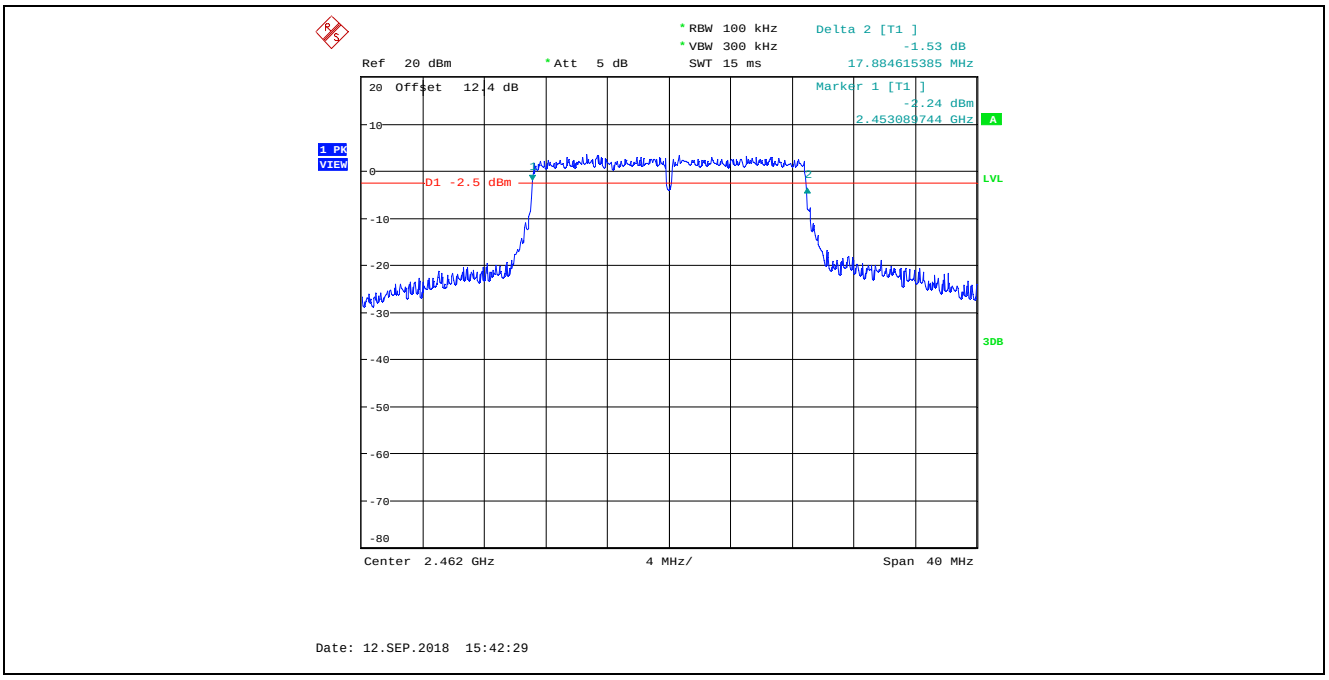
Plot 5.2.4.22. 6 dB Bandwidth
802.11n, MCS0, Power Setting 19, Channel 1, 2412 MHz



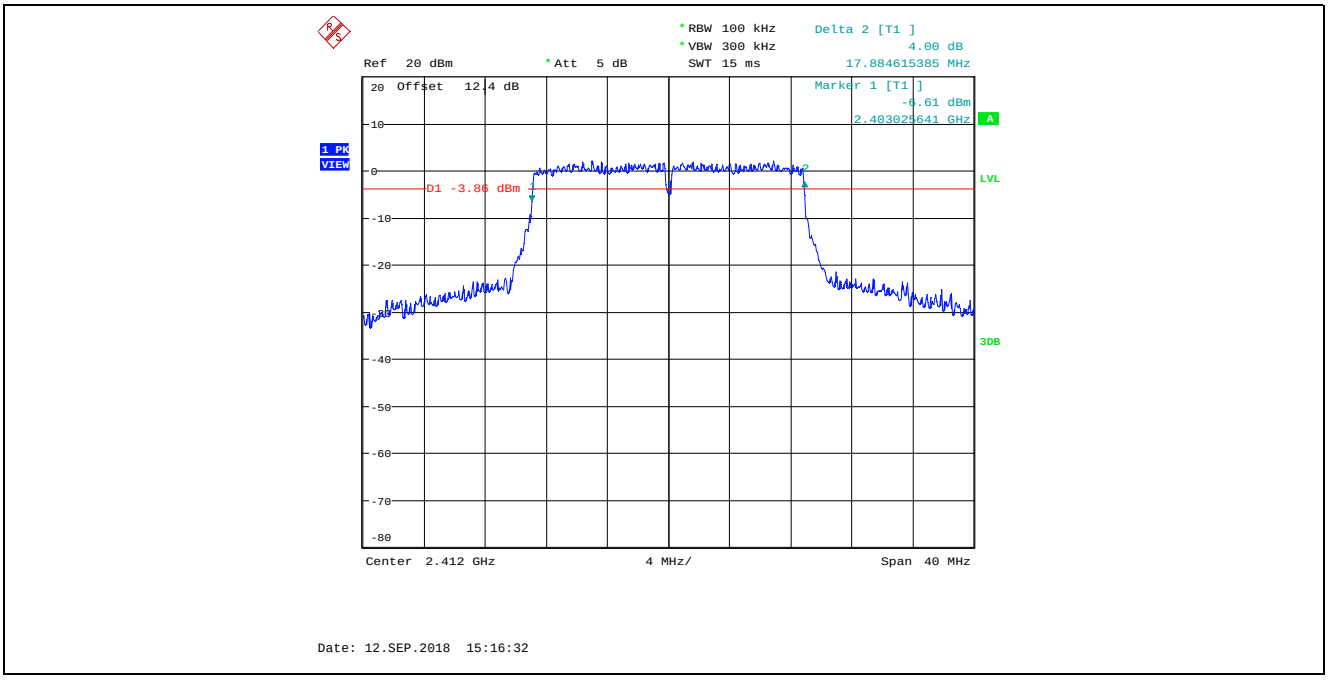
Plot 5.2.4.23. 6 dB Bandwidth
802.11n, MCS0, Power Setting 30, Channel 6, 2437 MHz



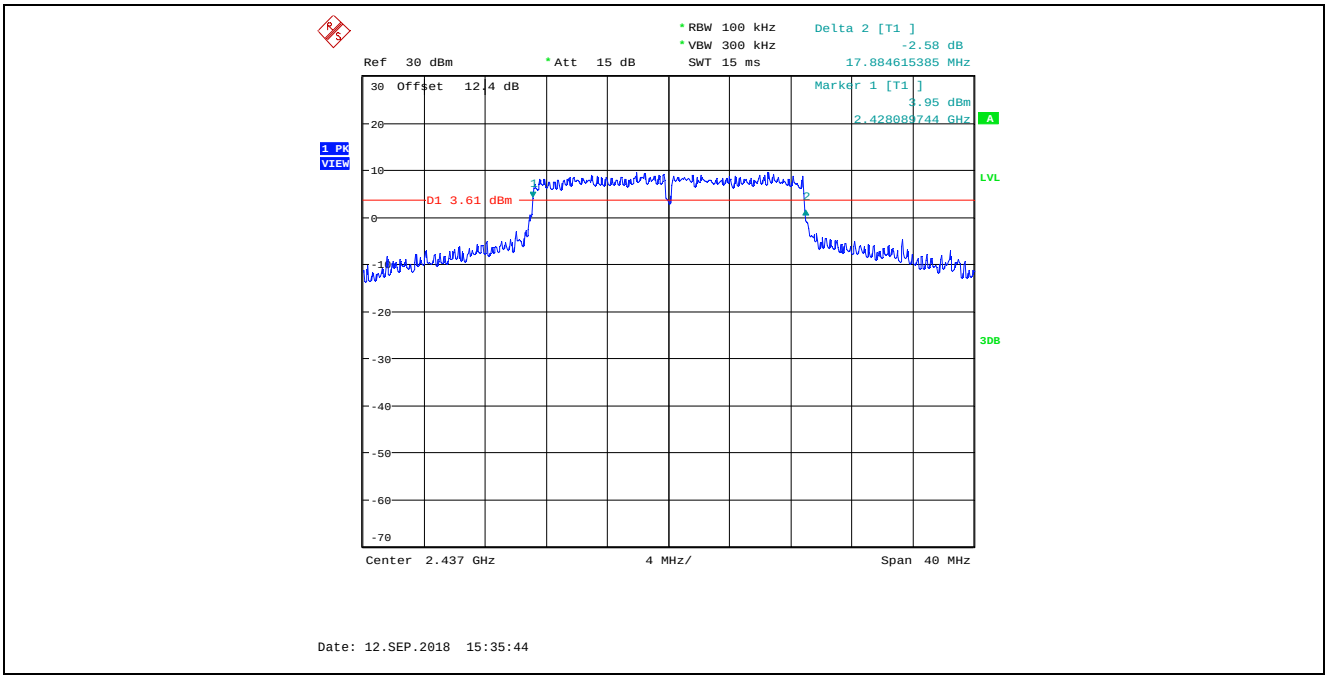
Plot 5.2.4.24. 6 dB Bandwidth
802.11n, MCS0, Power Setting 20, Channel 11, 2462 MHz



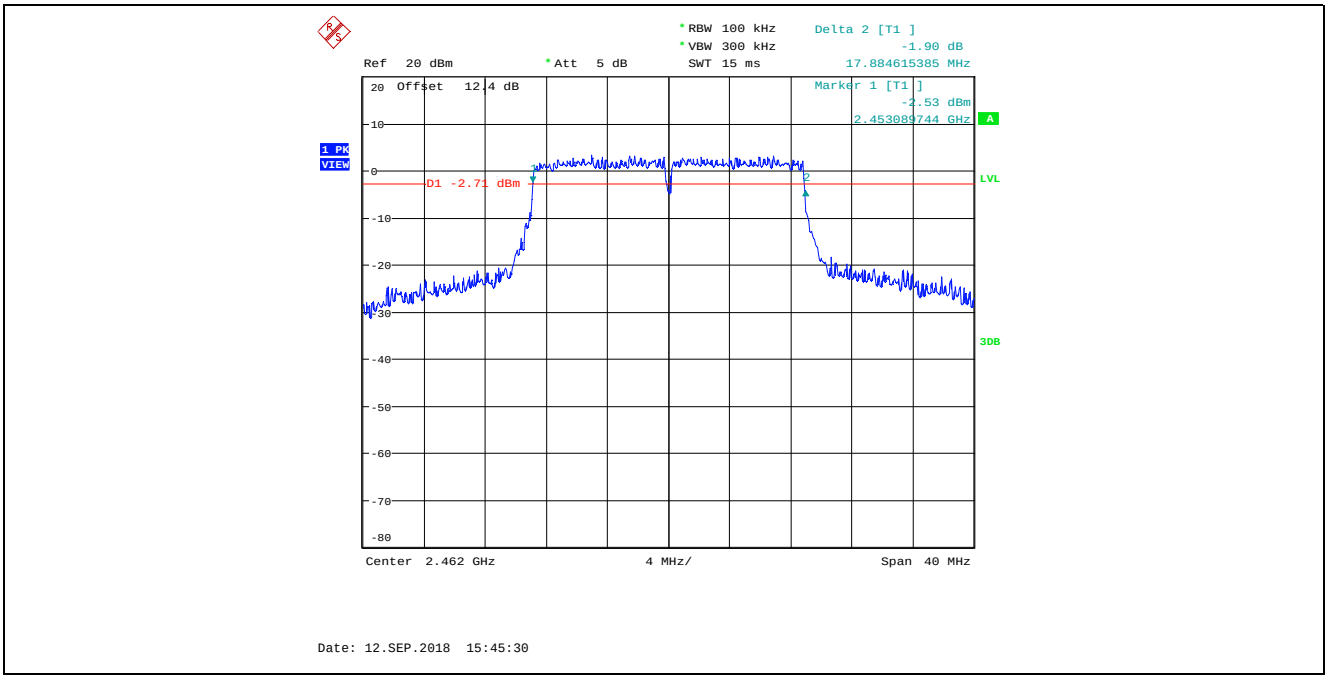
Plot 5.2.4.25. 6 dB Bandwidth
802.11n, MCS2, Power Setting 19, Channel 1, 2412 MHz



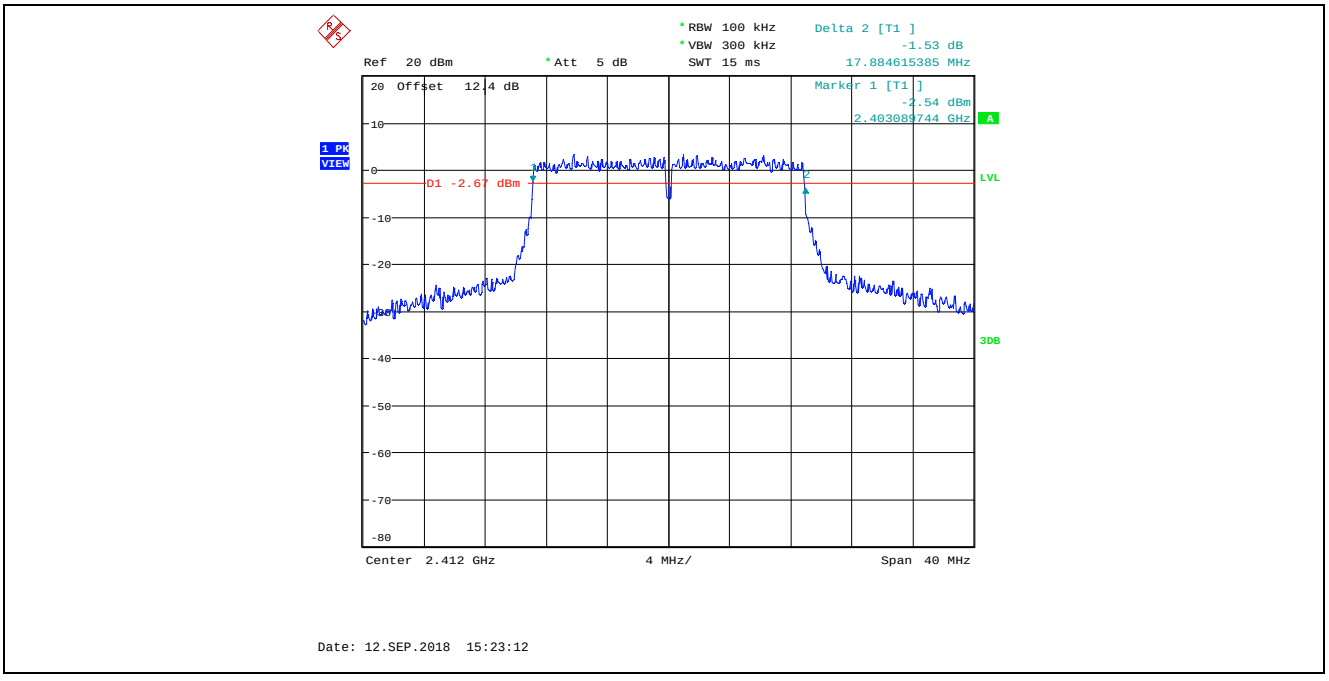
Plot 5.2.4.26. 6 dB Bandwidth
802.11n, MCS2, Power Setting 30, Channel 6, 2437 MHz



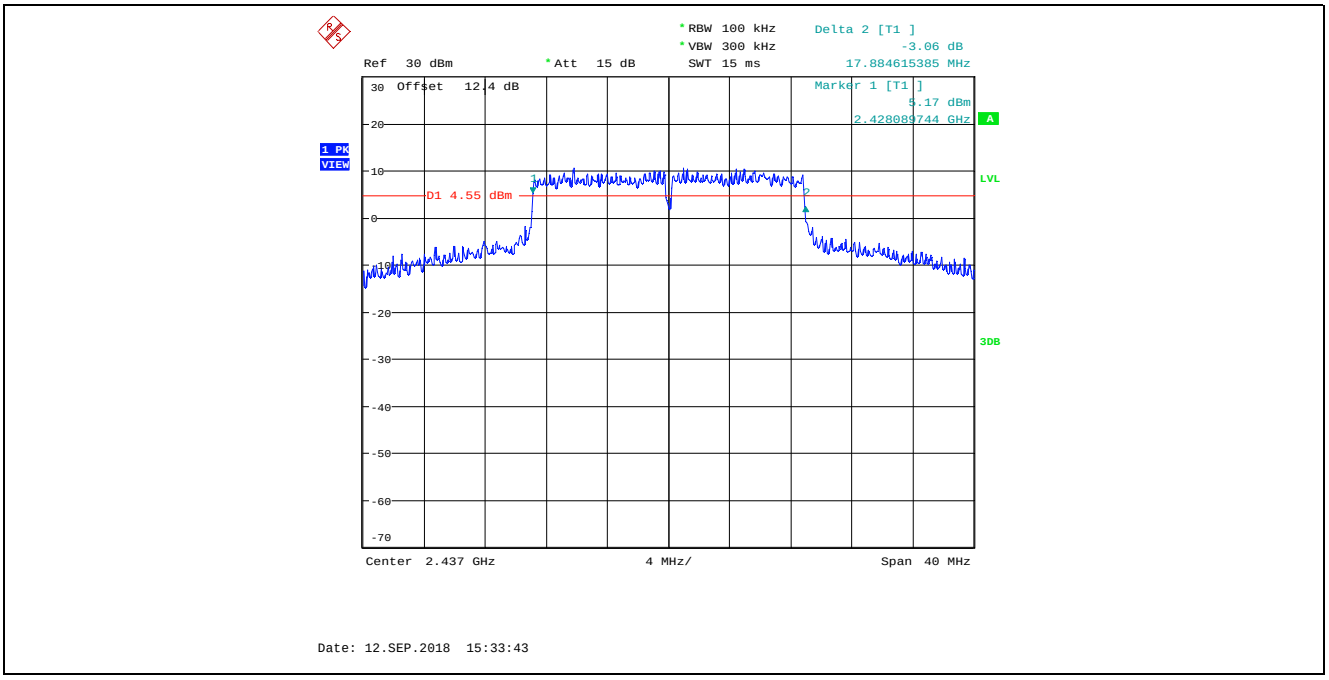
Plot 5.2.4.27. 6 dB Bandwidth
802.11n, MCS2, Power Setting 20, Channel 11, 2462 MHz



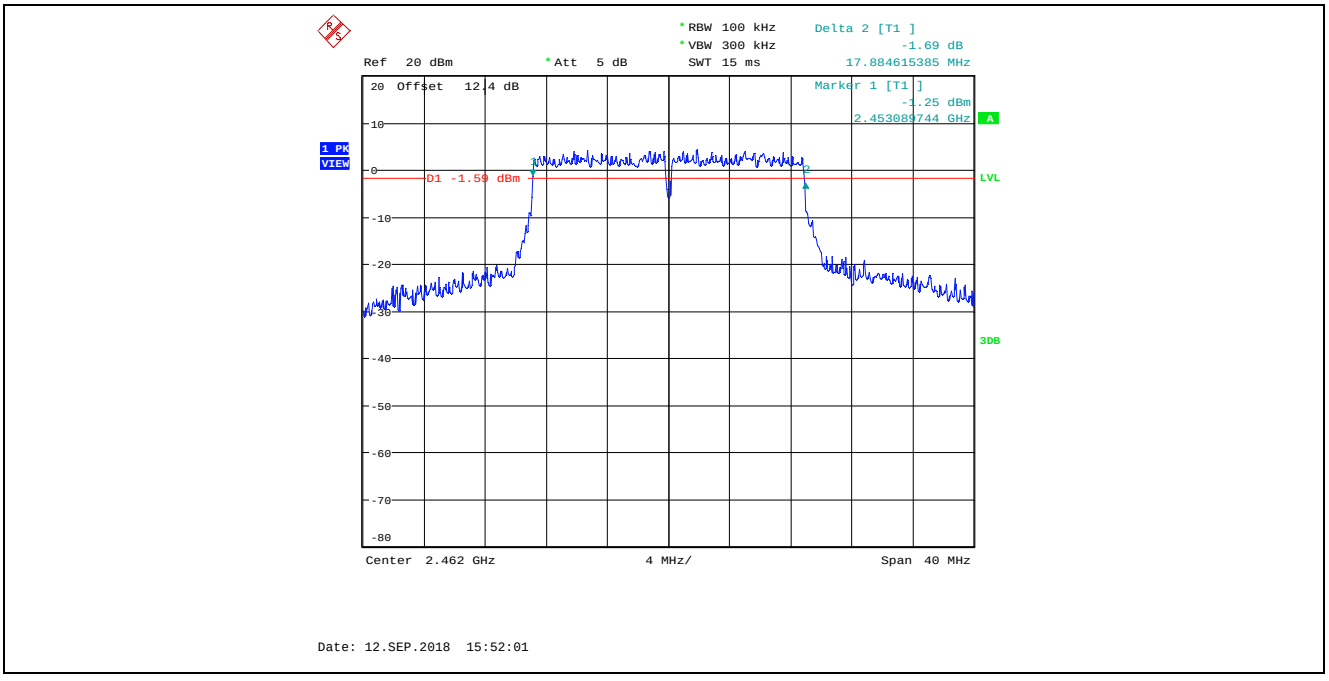
Plot 5.2.4.28. 6 dB Bandwidth
802.11n, MCS4, Power Setting 19, Channel 1, 2412 MHz



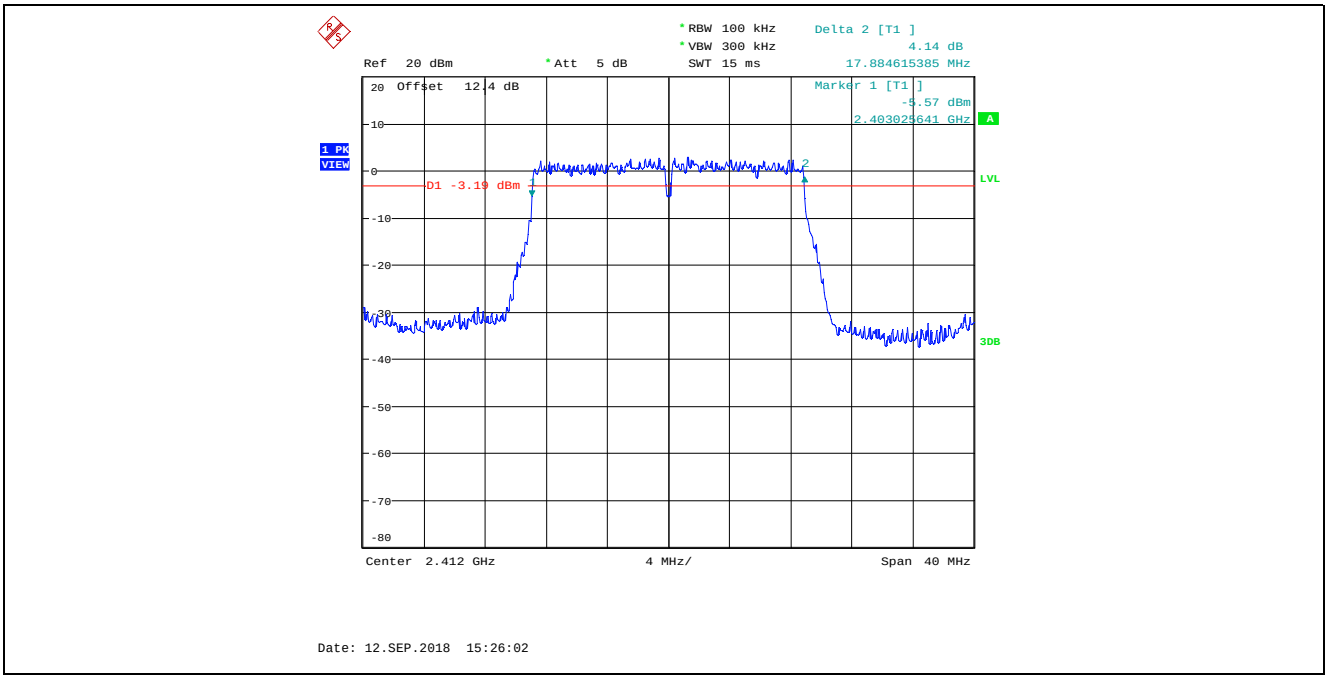
Plot 5.2.4.29. 6 dB Bandwidth
802.11n, MCS4, Power Setting 30, Channel 6, 2437 MHz



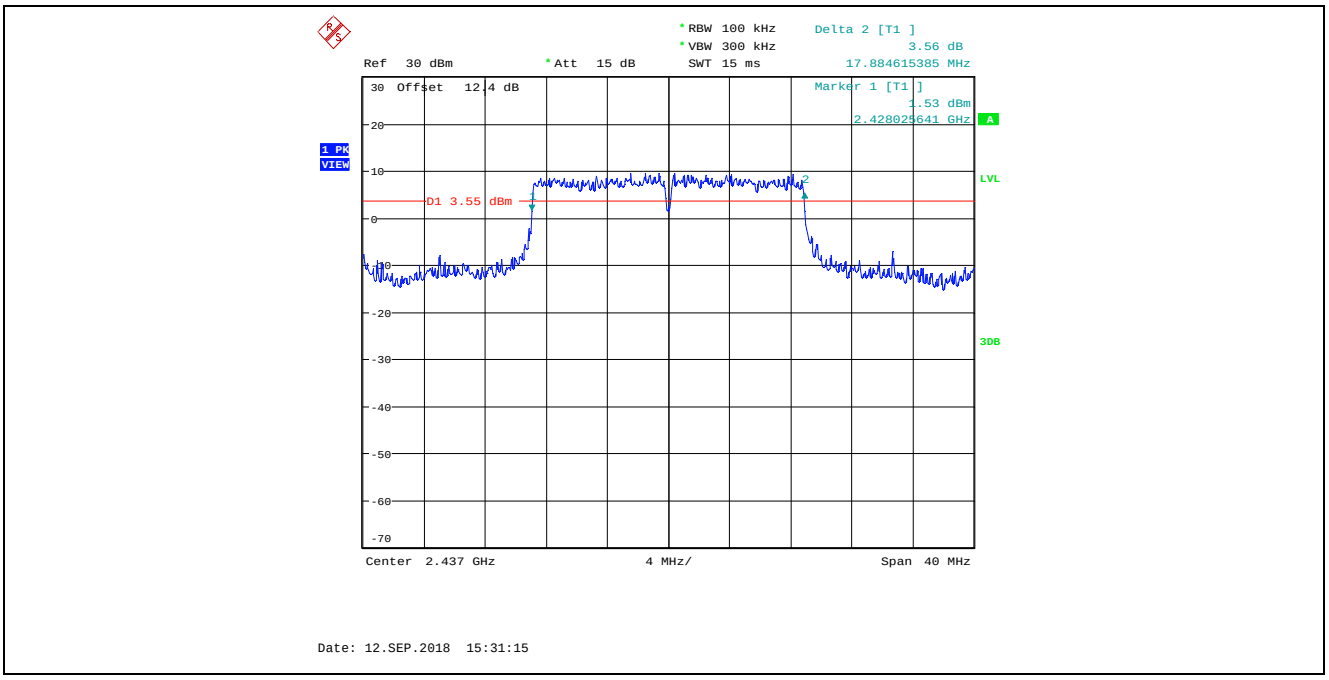
Plot 5.2.4.30. 6 dB Bandwidth
802.11n, MCS4, Power Setting 20, Channel 11, 2462 MHz



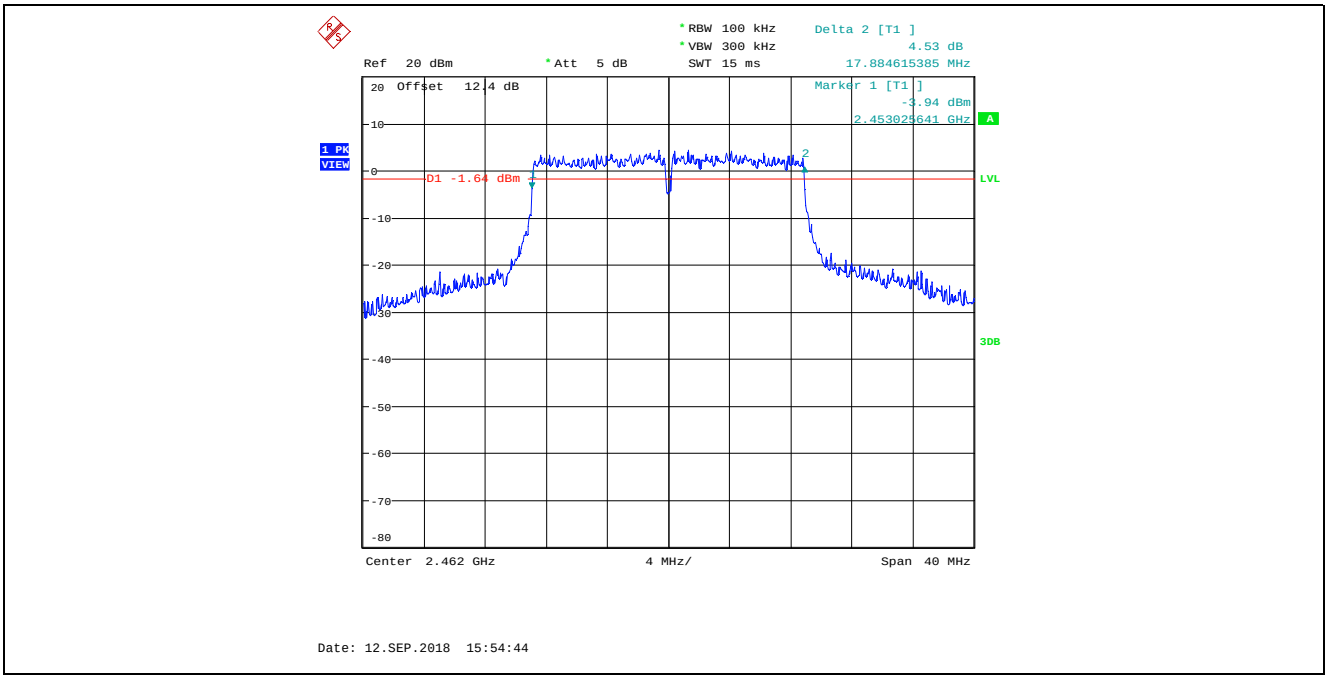
Plot 5.2.4.31. 6 dB Bandwidth
802.11n, MCS7, Power Setting 19, Channel 1, 2412 MHz



Plot 5.2.4.32. 6 dB Bandwidth
802.11n, MCS7, Power Setting 30, Channel 6, 2437 MHz



Plot 5.2.4.33. 6 dB Bandwidth
802.11n, MCS7, Power Setting 20, Channel 11, 2462 MHz



5.3. PEAK CONDUCTED OUTPUT POWER - DTS [§ 15.247(b)(3)]

5.3.1. Limit(s)

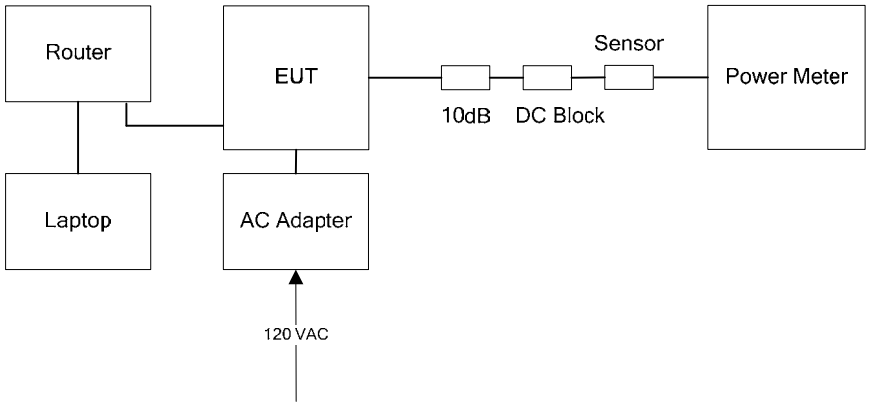
§ 15.247(b)(3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

§ 15.247(b)(4): The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3.2. Method of Measurements & Test Arrangement

FCC KDB 558074 D01 15.247 Meas Guidance v05, Section 8.3.1.3 PKPM1 Peak-reading power meter method / Subclause 11.9.1.3 of ANSI C63.10

5.3.3. Test Arrangement



5.3.4. Test Data

Peak Power and Power Setting for EUT with Ethertronics 2.5 dBi FPC Dipole Antenna							
Operating Mode		**Power Setting**	**Channel**	**Frequency (MHz)**	**Peak Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**
802.11b	1 Mbps DBPSK	26	1	2412	24.76	2.5	27.26
		28	2	2417	25.42	2.5	27.92
		30	3	2422	25.74	2.5	28.24
		30	6	2437	25.83	2.5	28.33
		30	9	2452	25.86	2.5	28.36
		27	10	2457	25.33	2.5	27.83
		25	11	2462	24.66	2.5	27.16
	2 Mbps DQPSK	26	1	2412	24.76	2.5	27.26
		28	2	2417	25.42	2.5	27.92
		30	3	2422	25.75	2.5	28.25
		30	6	2437	25.82	2.5	28.32
		30	9	2452	25.86	2.5	28.36
		27	10	2457	25.33	2.5	27.83
		25	11	2462	24.56	2.5	27.06
	11 Mbps CCK	26	1	2412	24.75	2.5	27.25
		28	2	2417	25.33	2.5	27.83
		30	3	2422	25.64	2.5	28.14
		30	6	2437	25.64	2.5	28.14
		30	9	2452	25.67	2.5	28.17
		27	10	2457	25.27	2.5	27.77
		25	11	2462	24.56	2.5	27.06

Peak Power and Power Setting for EUT with Ethertronics 2.5 dBi FPC Dipole Antenna							
Operating Mode		**Power Setting**	**Channel**	**Frequency (MHz)**	**Peak Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**
802.11g	9 Mbps BPSK	21	1	2412	24.57	2.5	27.07
		25	2	2417	25.66	2.5	28.16
		28	3	2422	26.01	2.5	28.51
		30	4	2427	26.09	2.5	28.59
		30	6	2437	26.09	2.5	28.59
		30	7	2442	26.09	2.5	28.59
		28	8	2447	26.06	2.5	28.56
		27	9	2452	25.85	2.5	28.35
		25	10	2457	25.77	2.5	28.27
		20	11	2462	24.36	2.5	26.86
	18 Mbps QPSK	21	1	2412	24.44	2.5	26.94
		25	2	2417	25.67	2.5	28.17
		28	3	2422	25.99	2.5	28.49
		30	4	2427	26.09	2.5	28.59
		30	6	2437	26.09	2.5	28.59
		30	7	2442	26.09	2.5	28.59
		28	8	2447	26.02	2.5	28.52
		27	9	2452	25.98	2.5	28.48
		25	10	2457	25.85	2.5	28.35
		20	11	2462	24.27	2.5	26.77

Peak Power and Power Setting for EUT with Ethertronics 2.5 dBi FPC Dipole Antenna							
Operating Mode		Power Setting	Channel	Frequency (MHz)	Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)
802.11g	36 Mbps 16-QAM	21	1	2412	24.79	2.5	27.29
		25	2	2417	25.74	2.5	28.24
		28	3	2422	25.99	2.5	28.49
		30	4	2427	26.09	2.5	28.59
		30	6	2437	26.09	2.5	28.59
		30	7	2442	26.13	2.5	28.63
		28	8	2447	25.99	2.5	28.49
		27	9	2452	25.89	2.5	28.39
		25	10	2457	25.87	2.5	28.37
		20	11	2462	24.23	2.5	26.73
	54 Mbps 64-QAM	21	1	2412	24.39	2.5	26.89
		25	2	2417	25.59	2.5	28.09
		28	3	2422	26.02	2.5	28.52
		30	4	2427	26.09	2.5	28.59
		30	6	2437	26.33	2.5	28.83
		30	7	2442	26.31	2.5	28.81
		28	8	2447	26.01	2.5	28.51
		27	9	2452	25.99	2.5	28.49
		25	10	2457	25.95	2.5	28.45
		20	11	2462	24.22	2.5	26.72

Peak Power and Power Setting for EUT with Ethertronics 2.5 dBi FPC Dipole Antenna							
Operating Mode		**Power Setting**	**Channel**	**Frequency (MHz)**	**Peak Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**
802.11n	MCS0 6.5 Mbps BPSK ½	19	1	2412	23.39	2.5	25.89
		25	2	2417	25.71	2.5	28.21
		27	3	2422	26.03	2.5	28.53
		29	4	2427	26.10	2.5	28.60
		30	5	2432	26.13	2.5	28.63
		30	6	2437	26.12	2.5	28.62
		30	7	2442	26.10	2.5	28.60
		28	8	2447	26.08	2.5	28.58
		26	9	2452	25.96	2.5	28.46
		25	10	2457	25.91	2.5	28.41
		20	11	2462	24.79	2.5	27.29
	MCS2 19.5 Mbps QPSK ¾	19	1	2412	23.63	2.5	26.13
		25	2	2417	25.88	2.5	28.38
		27	3	2422	26.00	2.5	28.50
		29	4	2427	26.10	2.5	28.60
		30	5	2432	26.10	2.5	28.60
		30	6	2437	26.10	2.5	28.60
		30	7	2442	26.10	2.5	28.60
		28	8	2447	26.10	2.5	28.60
		26	9	2452	25.93	2.5	28.43
		25	10	2457	25.89	2.5	28.39
		20	11	2462	24.47	2.5	26.97

Peak Power and Power Setting for EUT with Ethertronics 2.5 dBi FPC Dipole Antenna							
Operating Mode		**Power Setting**	**Channel**	**Frequency (MHz)**	**Peak Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**
802.11n	MCS4 39 Mbps 16-QAM ¾	19	1	2412	23.26	2.5	25.76
		25	2	2417	25.83	2.5	28.33
		27	3	2422	26.02	2.5	28.52
		29	4	2427	26.08	2.5	28.58
		30	5	2432	26.10	2.5	28.60
		30	6	2437	26.10	2.5	28.60
		30	7	2442	26.10	2.5	28.60
		28	8	2447	26.10	2.5	28.60
		26	9	2452	25.94	2.5	28.44
		25	10	2457	25.92	2.5	28.42
		20	11	2462	24.24	2.5	26.74
	MCS7 65 Mbps 64-QAM 5/6	19	1	2412	24.09	2.5	26.59
		25	2	2417	25.86	2.5	28.36
		27	3	2422	25.99	2.5	28.49
		29	4	2427	26.10	2.5	28.60
		30	5	2432	26.12	2.5	28.62
		30	6	2437	26.15	2.5	28.65
		30	7	2442	26.10	2.5	28.60
		28	8	2447	26.10	2.5	28.60
		26	9	2452	25.95	2.5	28.45
		25	10	2457	25.91	2.5	28.41
		20	11	2462	24.45	2.5	26.95

Peak Power and Power Setting for EUT with Airgain 1.6 dBi FPC Dipole Antenna							
Operating Mode		Power Setting	Channel	Frequency (MHz)	Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)
802.11b	1 Mbps DBPSK	22	1	2412	22.66	1.6	24.26
		22	6	2437	22.44	1.6	24.04
		22	11	2462	22.46	1.6	24.06
	2 Mbps DQPSK	22	1	2412	22.05	1.6	23.65
		22	6	2437	22.52	1.6	24.12
		22	11	2462	22.46	1.6	24.06
	11 Mbps CCK	22	1	2412	21.88	1.6	23.48
		22	6	2437	22.06	1.6	23.66
		22	11	2462	22.25	1.6	23.85

Peak Power and Power Setting for EUT with Airgain 1.6 dBi FPC Dipole Antenna							
Operating Mode		Power Setting	Channel	Frequency (MHz)	Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)
802.11g	9 Mbps BPSK	16	1	2412	19.70	1.6	21.30
		16	6	2437	20.70	1.6	22.30
		16	11	2462	20.65	1.6	22.25
	18 Mbps QPSK	16	1	2412	20.00	1.6	21.60
		16	6	2437	20.19	1.6	21.79
		16	11	2462	20.25	1.6	21.85
	36 Mbps 16-QAM	16	1	2412	20.35	1.6	21.95
		16	6	2437	20.52	1.6	22.12
		16	11	2462	20.41	1.6	22.01
	54 Mbps 64-QAM	16	1	2412	20.41	1.6	22.01
		16	6	2437	20.07	1.6	21.67
		16	11	2462	20.36	1.6	21.96

Peak Power and Power Setting for EUT with Airgain 1.6 dBi FPC Dipole Antenna							
Operating Mode		**Power Setting**	**Channel**	**Frequency (MHz)**	**Peak Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**
802.11n	MCS0 6.5 Mbps BPSK ½	15	1	2412	20.11	1.6	21.71
		15	6	2437	20.97	1.6	22.57
		15	11	2462	20.16	1.6	21.76
	MCS2 19.5 Mbps QPSK ¾	15	1	2412	20.02	1.6	21.62
		15	6	2437	20.37	1.6	21.97
		15	11	2462	20.68	1.6	22.28
802.11n	MCS4 39 Mbps 16-QAM ¾	15	1	2412	20.59	1.6	22.19
		15	6	2437	20.15	1.6	21.75
		15	11	2462	20.53	1.6	22.13
	MCS7 65 Mbps 64-QAM 5/6	15	1	2412	20.45	1.6	22.05
		15	6	2437	20.05	1.6	21.65
		15	11	2462	20.68	1.6	22.28

5.4. TRANSMITTER SPURIOUS RADIATED EMISSIONS AT 3 METERS [§§ 15.247(d), 15.209 & 15.205]

5.4.1. Limit(s)

§ 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Section 15.205(a) - Restricted Bands of Operation

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1] 0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	[2]
13.36–13.41.			

[1] Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.
[2] Above 38.6

Section 15.209(a) - Field Strength Limits within Restricted Frequency Bands

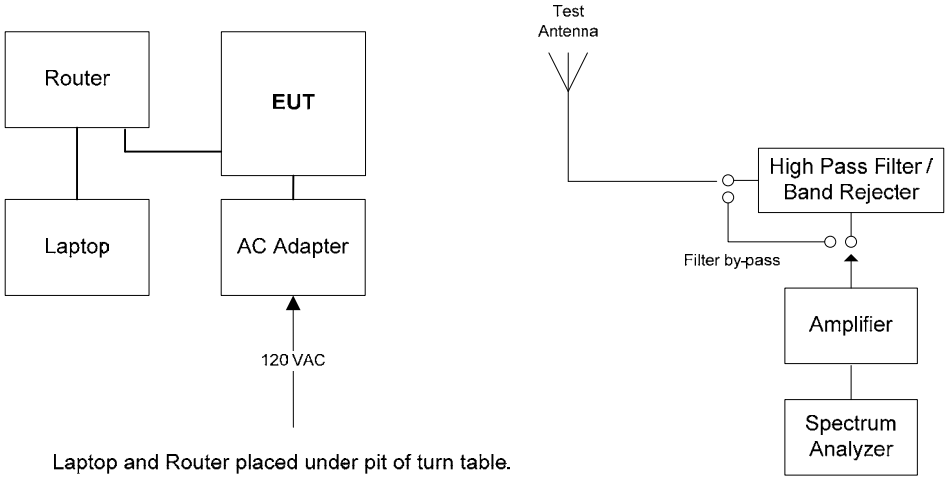
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400 / F (kHz)	300
0.490 - 1.705	24,000 / F (kHz)	30
1.705 - 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

5.4.2. Method of Measurements

FCC KDB 558074 D01 15.247 Meas Guidance v05 Sections 8.5, 8.6 and 8.7 / Subclauses 11.11, 11.12 and 11.13.of ANSI C63.10.

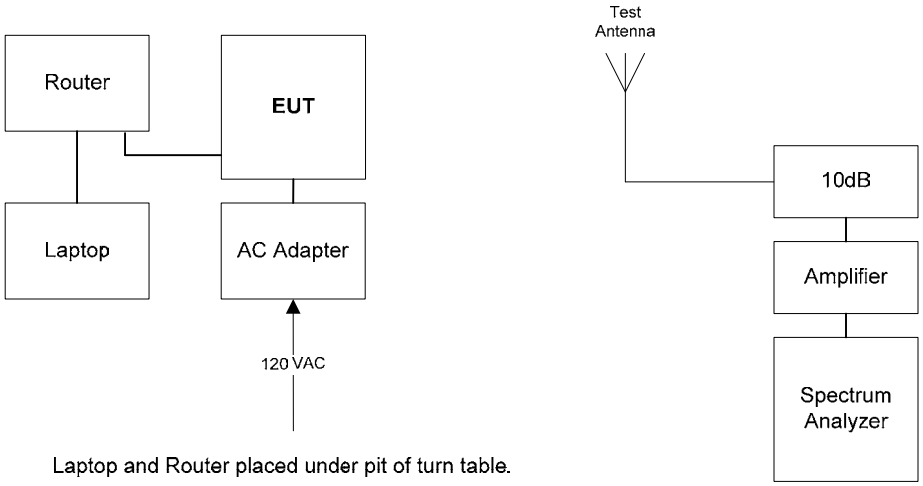
5.4.3. Test Arrangement

Radiated Emissions



Laptop and Router placed under pit of turn table.

Band-Edge Radiated Emissions



Laptop and Router placed under pit of turn table.

5.4.4. Test Data

Remark(s):
- All spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.
- EUT shall be tested in three orthogonal positions.
- The simultaneous transmission was investigated and no new emissions were found.
- Exploratory tests performed to determined worst-case test configurations, the following test results represent the worst-case.

5.4.4.1. Test Configuration 1: EUT with Ethertronics 2.5 dBi FPC Dipole Antenna

5.4.4.1.1. Spurious Radiated Emissions for 802.11b 1Mbps DBPSK

Fundamental Frequency:	2412 MHz
Frequency Test Range:	30 MHz – 25 GHz
Power Setting:	26 (for fundamental)
	28 (for spurious emissions)

Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
2412	110.49	--	V	--	--	--	--
2412	115.23	--	H	--	--	--	--
4824	55.53	53.02	V	54.0	95.2	-1.0	Pass*
4824	52.54	50.03	H	54.0	95.2	-4.0	Pass*

*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:	2437 MHz
Frequency Test Range:	30 MHz – 25 GHz
Power Setting:	30 (for fundamental)
	30 (for spurious emissions)

Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
2437	112.35	--	V	--	--	--	--
2437	116.87	--	H	--	--	--	--
4874	53.42	49.71	V	54.0	96.9	-4.3	Pass*
4874	51.89	47.90	H	54.0	96.9	-6.1	Pass*
7311	50.27	37.92	V	54.0	96.9	-16.1	Pass*
7311	52.80	42.26	H	54.0	96.9	-11.7	Pass*

*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

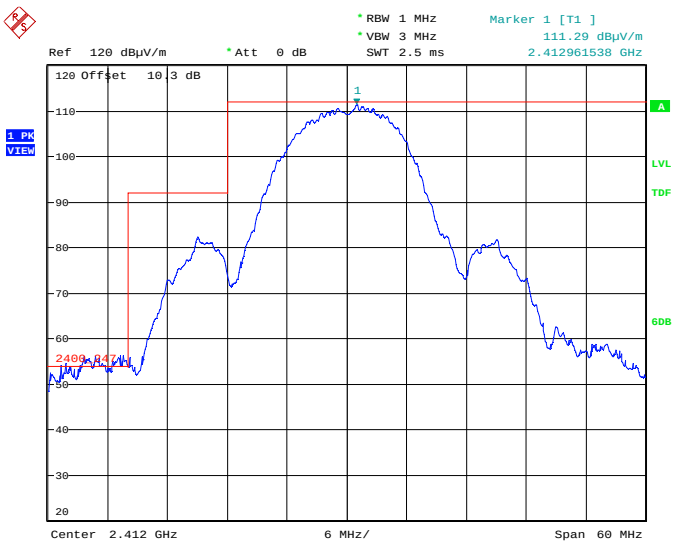
Fundamental Frequency:	2462 MHz
Frequency Test Range:	30 MHz – 25 GHz
Power Setting:	25 (for fundamental) 30 (for spurious emissions)

Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
2462	110.41	--	V	--	--	--	--
2462	113.57	--	H	--	--	--	--
4924	49.76	44.79	V	54.0	93.6	-9.2	Pass*
7386	50.89	38.22	V	54.0	93.6	-15.8	Pass*
4924	49.08	43.39	H	54.0	93.6	-10.6	Pass*
7386	52.09	43.22	H	54.0	93.6	-10.8	Pass*

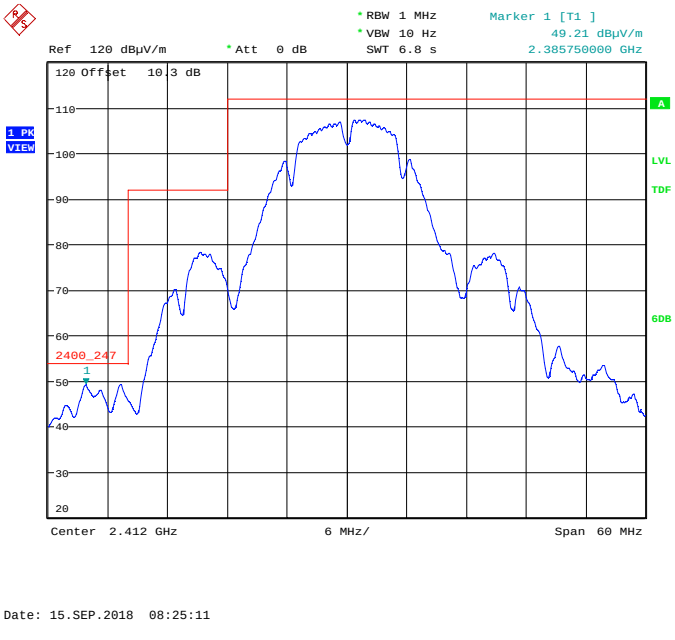
*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

5.4.4.1.2. Band–Edge RF Radiated Emissions for 802.11b

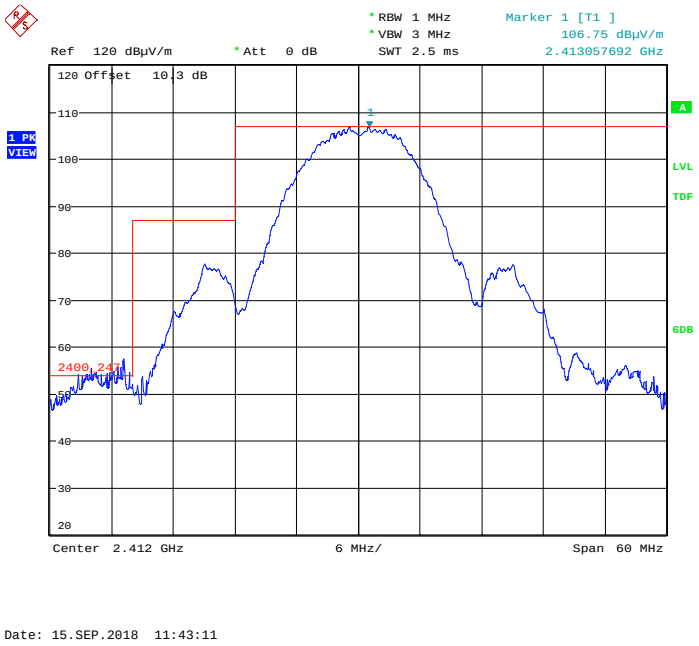
Plot 5.4.4.1.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
1 Mbps DBPSK, Power Setting 26, Channel 1, 2412 MHz



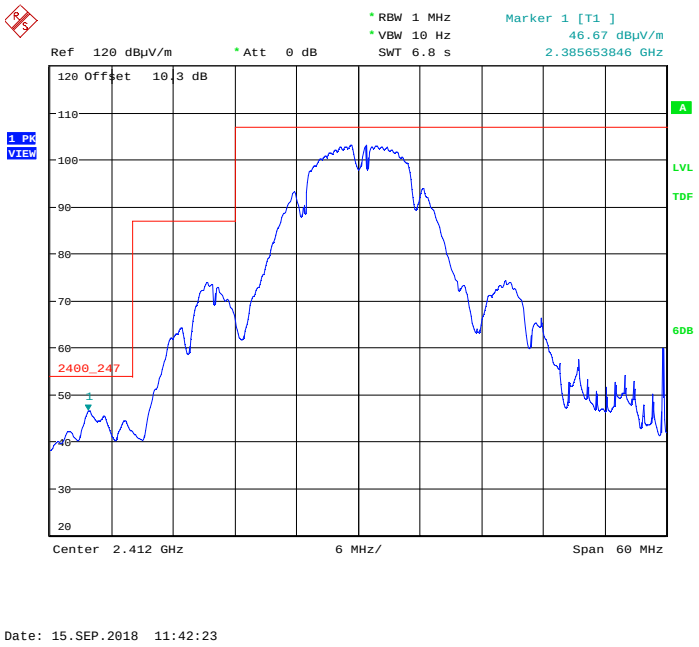
Plot 5.4.4.1.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
1 Mbps DBPSK, Power Setting 26, Channel 1, 2412 MHz



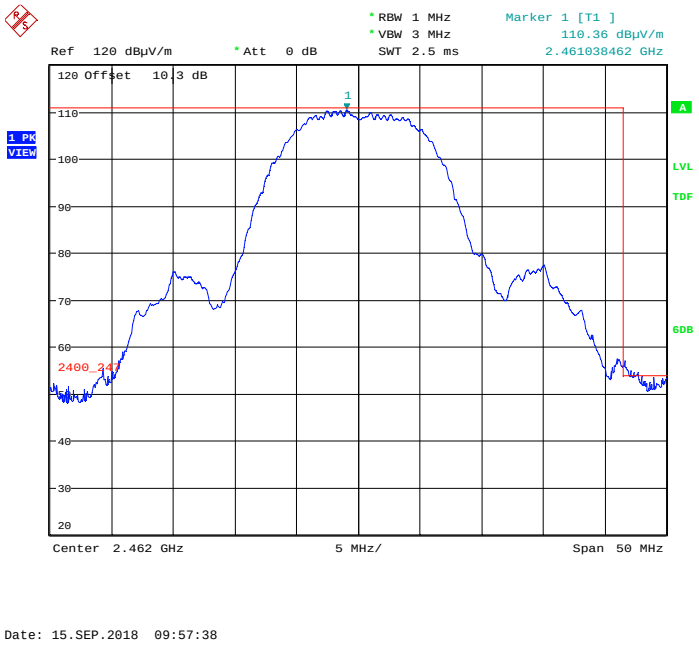
Plot 5.4.4.1.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
1 Mbps DBPSK, Power Setting 26, Channel 1, 2412 MHz



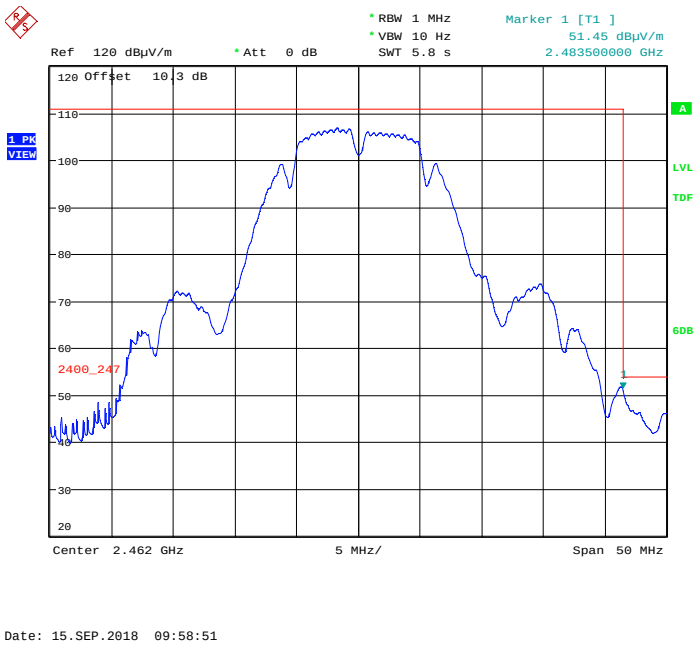
Plot 5.4.4.1.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
1 Mbps DBPSK, Power Setting 26, Channel 1, 2412 MHz



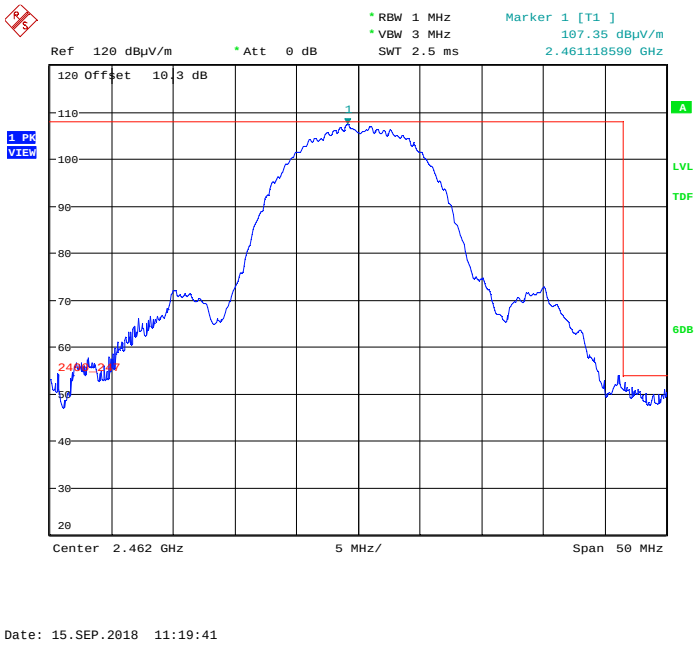
Plot 5.4.4.1.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
1 Mbps DBPSK, Power Setting 25, Channel 11, 2462 MHz



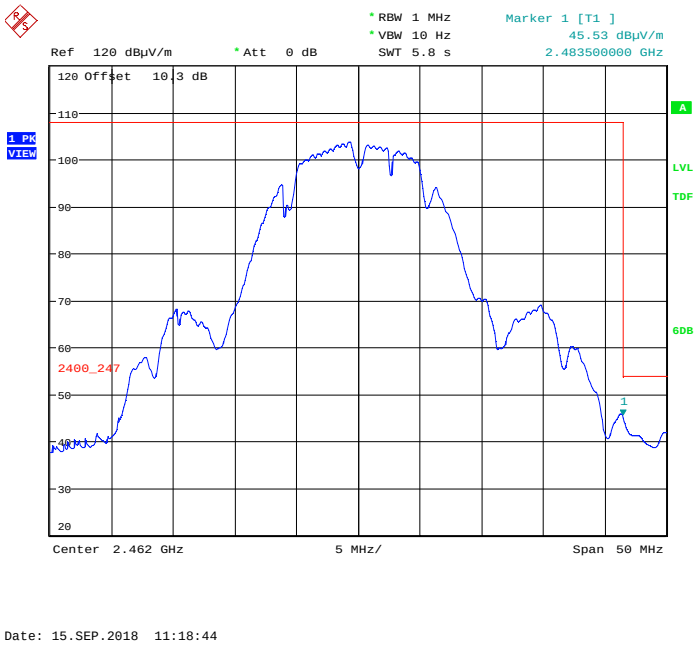
Plot 5.4.4.1.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
1 Mbps DBPSK, Power Setting 25, Channel 11, 2462 MHz



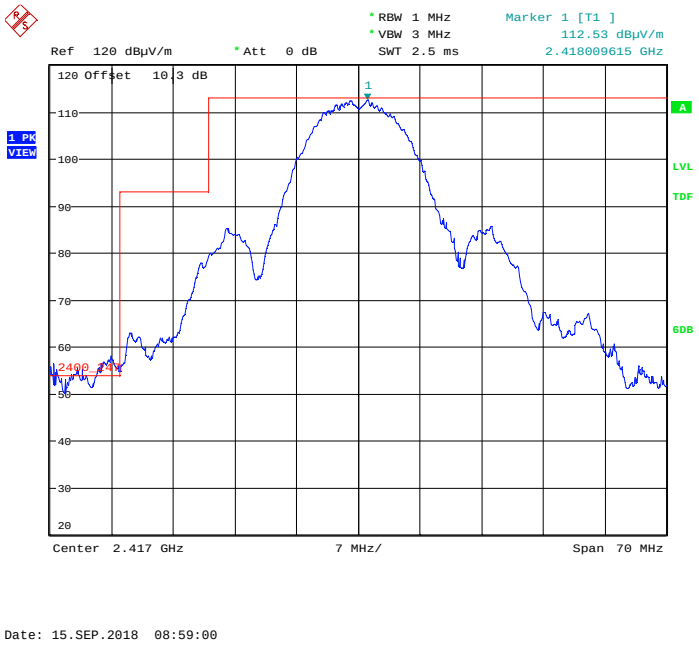
Plot 5.4.4.1.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
1 Mbps DBPSK, Power Setting 25, Channel 11, 2462 MHz



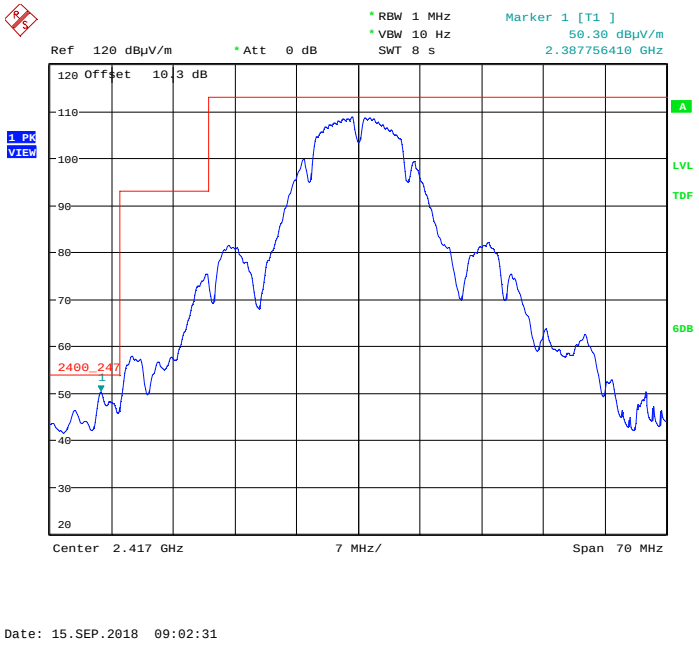
Plot 5.4.4.1.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
1 Mbps DBPSK, Power Setting 25, Channel 11, 2462 MHz



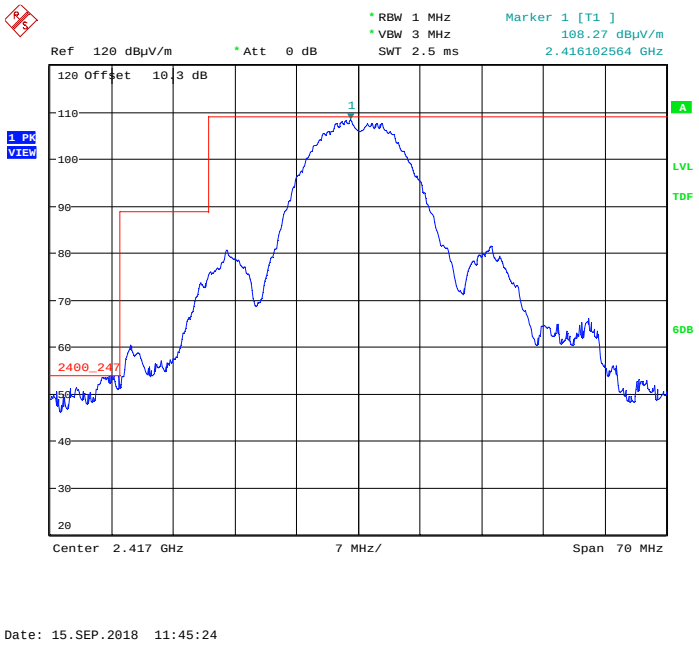
Plot 5.4.4.1.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
1 Mbps DBPSK, Power Setting 28, Channel 2, 2417 MHz



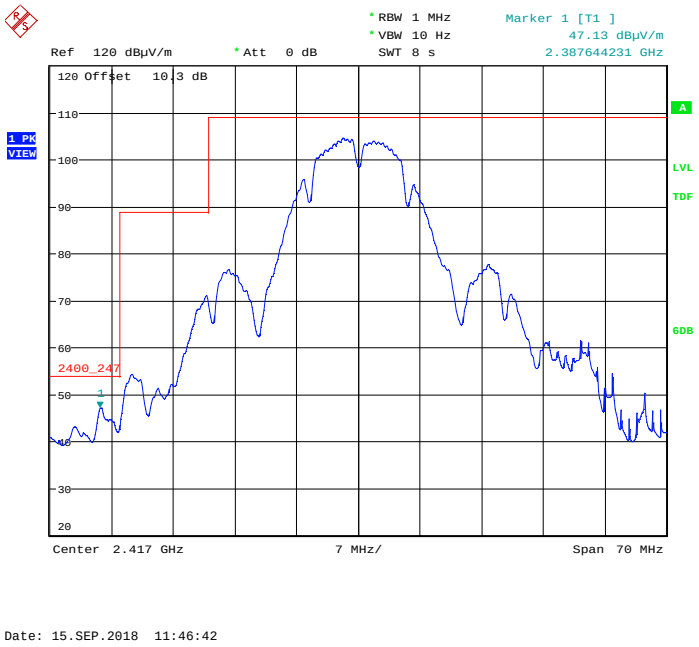
Plot 5.4.4.1.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
1 Mbps DBPSK, Power Setting 28, Channel 2, 2417 MHz



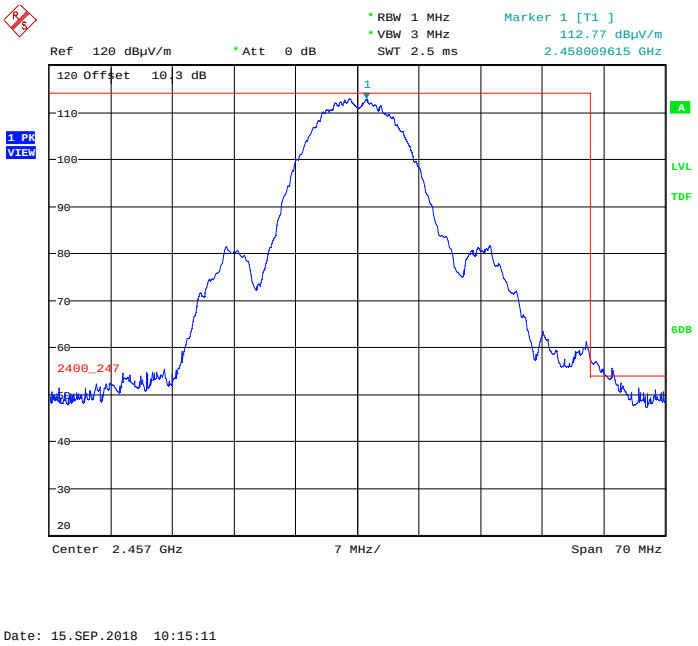
Plot 5.4.4.1.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
1 Mbps DBPSK, Power Setting 28, Channel 2, 2417 MHz



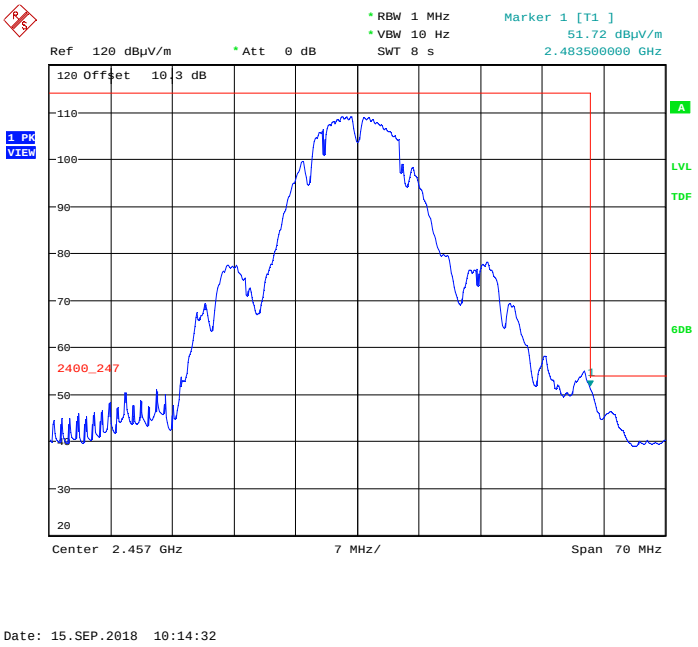
Plot 5.4.4.1.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
1 Mbps DBPSK, Power Setting 28, Channel 2, 2417 MHz



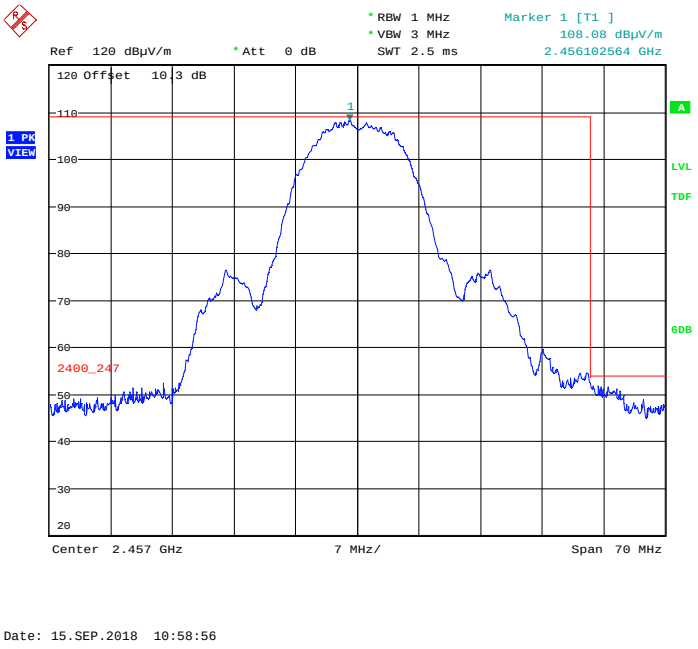
Plot 5.4.4.1.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
1 Mbps DBPSK, Power Setting 27, Channel 10, 2457 MHz



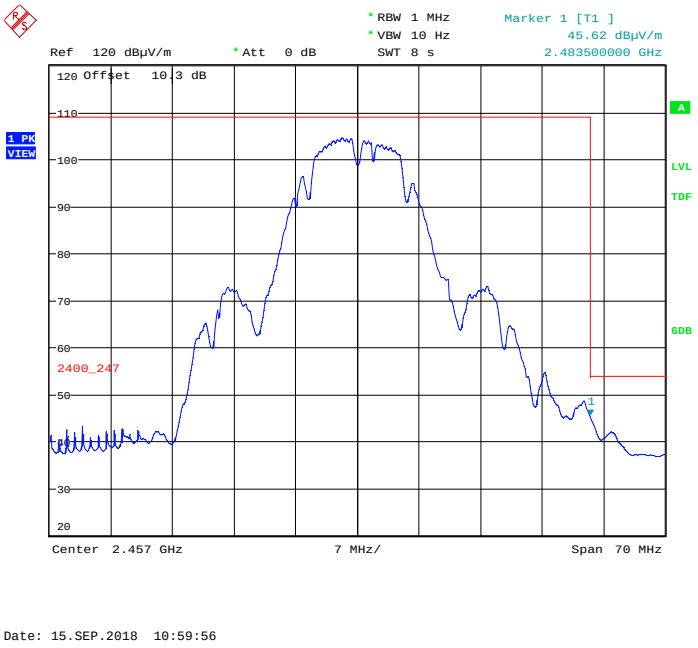
Plot 5.4.4.1.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
1 Mbps DBPSK, Power Setting 27, Channel 10, 2457 MHz



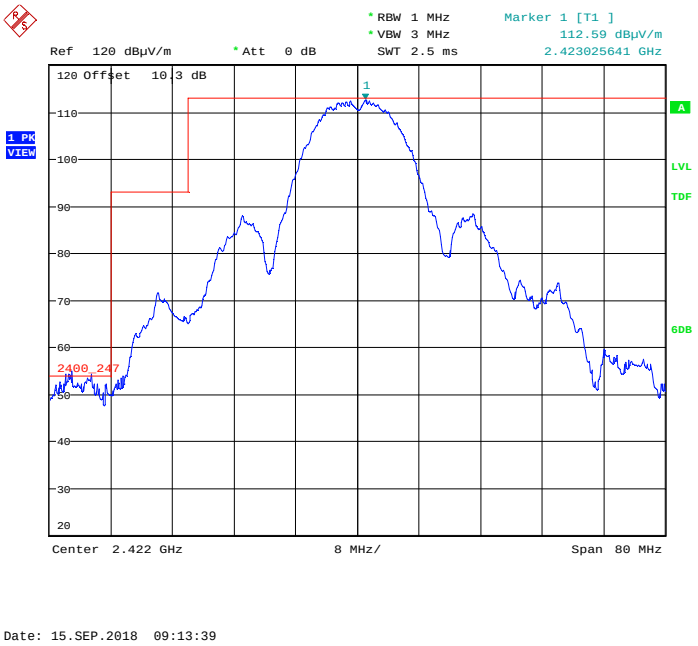
Plot 5.4.4.1.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
1 Mbps DBPSK, Power Setting 27, Channel 10, 2457 MHz



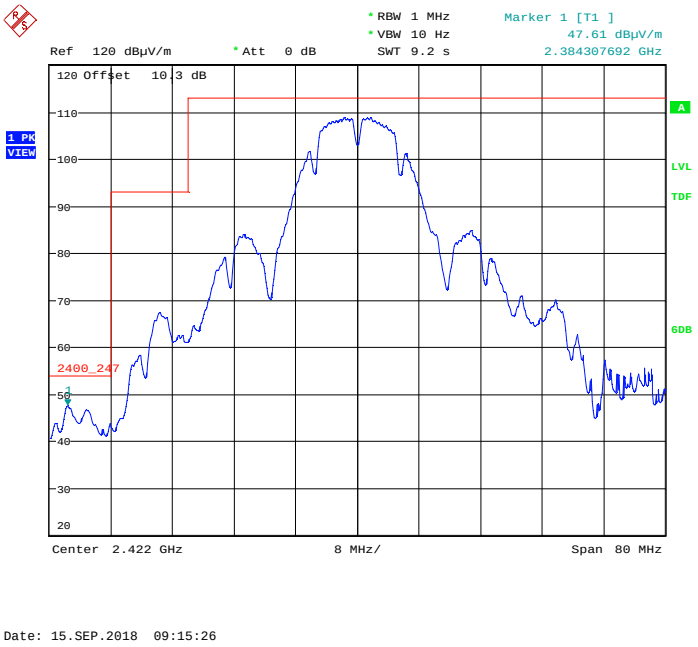
Plot 5.4.4.1.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
1 Mbps DBPSK, Power Setting 27, Channel 10, 2457 MHz



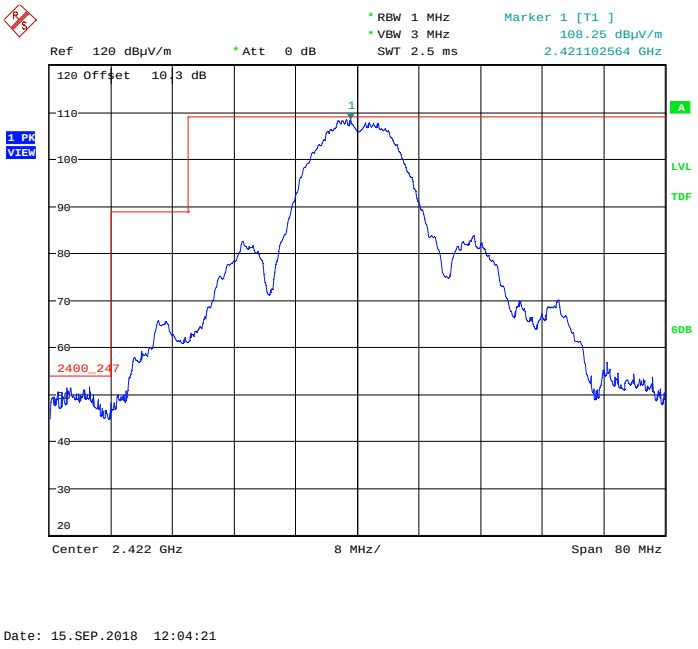
Plot 5.4.4.1.2.17. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
1 Mbps DBPSK, Power Setting 30, Channel 3, 2422 MHz



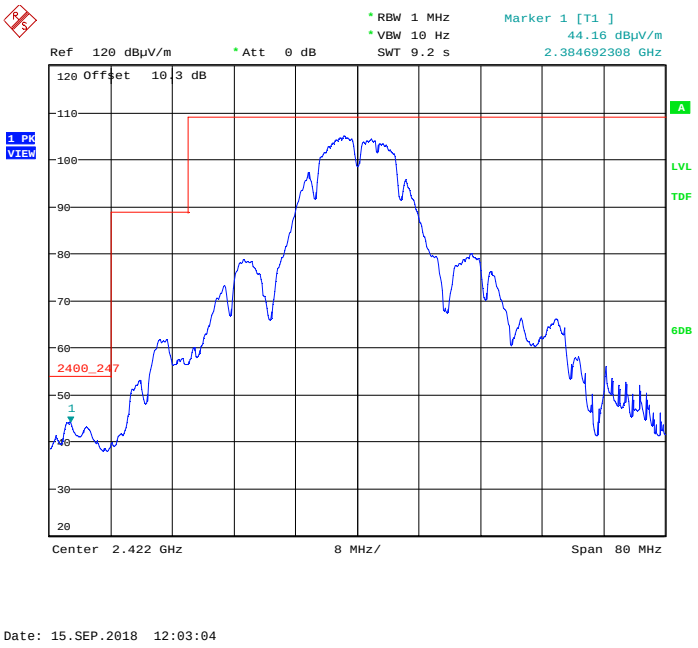
Plot 5.4.4.1.2.18. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
1 Mbps DBPSK, Power Setting 30, Channel 3, 2422 MHz



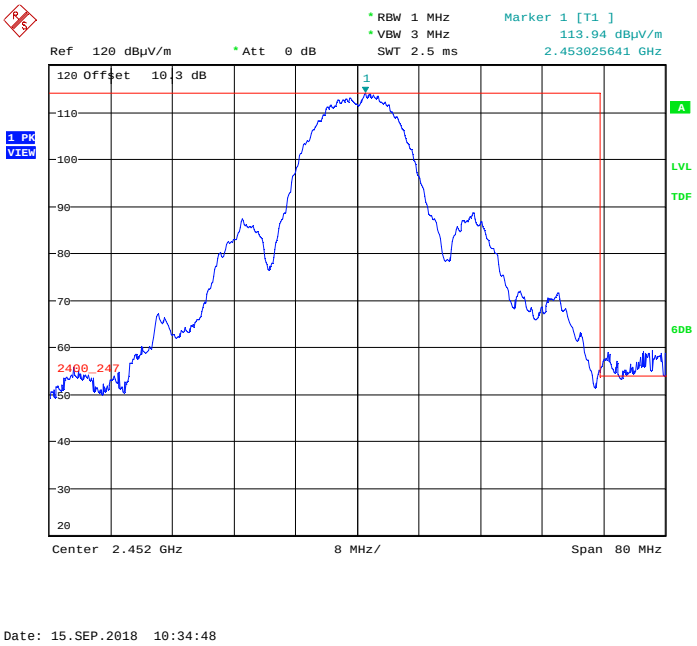
Plot 5.4.4.1.2.19. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
1 Mbps DBPSK, Power Setting 30, Channel 3, 2422 MHz



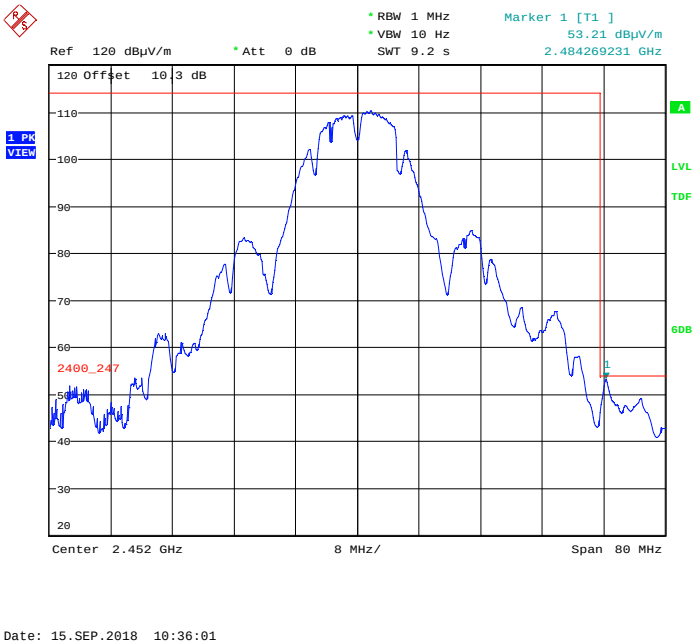
Plot 5.4.4.1.2.20. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
1 Mbps DBPSK, Power Setting 30, Channel 3, 2422 MHz



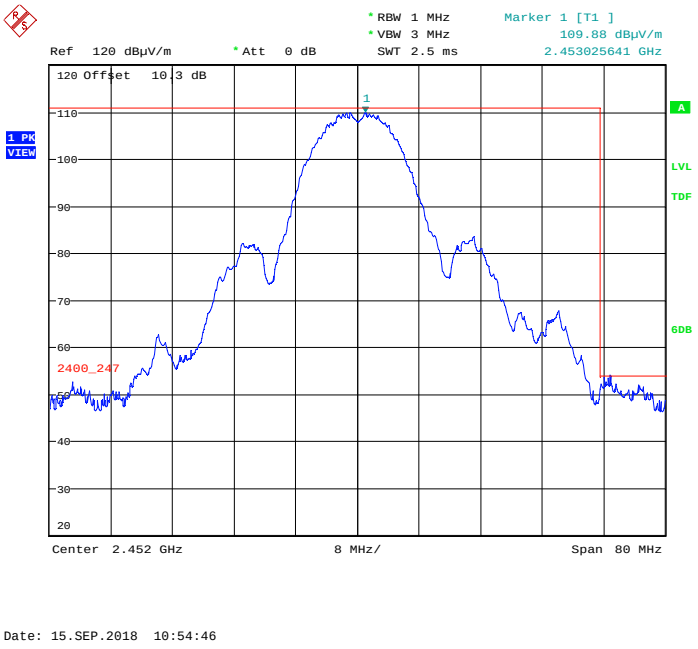
Plot 5.4.4.1.2.21. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
1 Mbps DBPSK, Power Setting 30, Channel 9, 2452 MHz



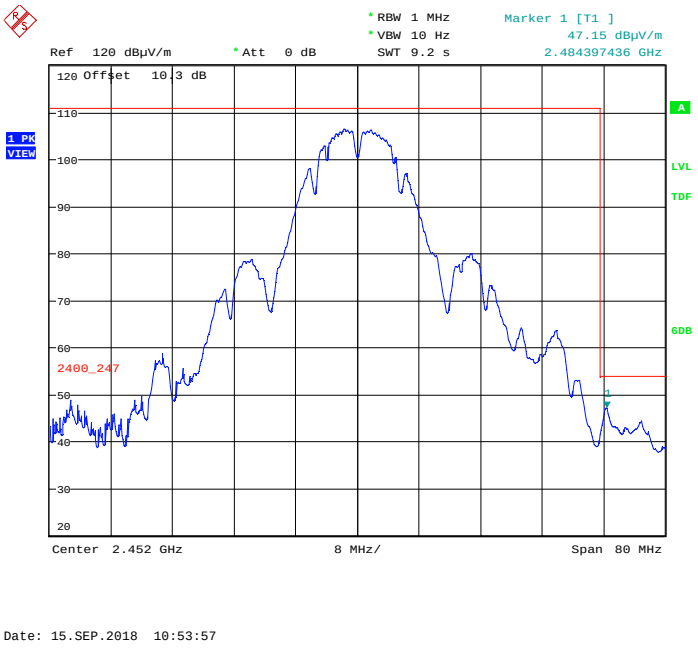
Plot 5.4.4.1.2.22. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
1 Mbps DBPSK, Power Setting 30, Channel 9, 2452 MHz



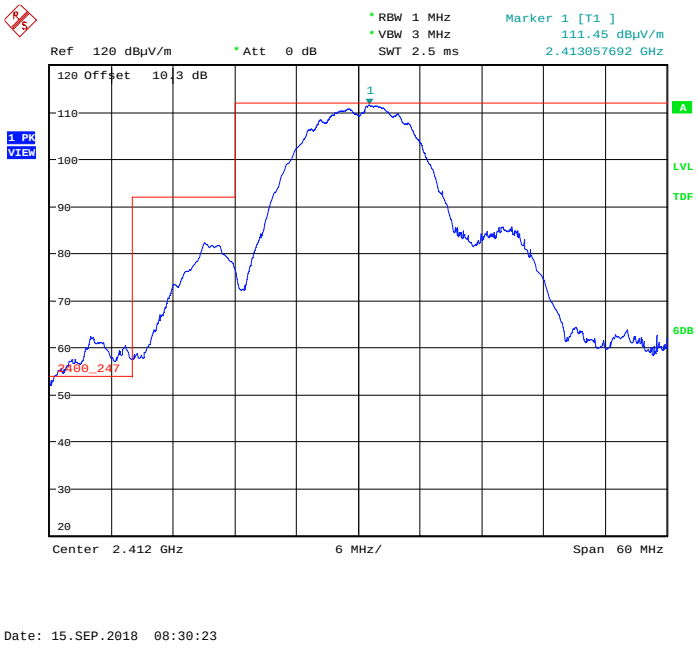
Plot 5.4.4.1.2.23. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
1 Mbps DBPSK, Power Setting 30, Channel 9, 2452 MHz



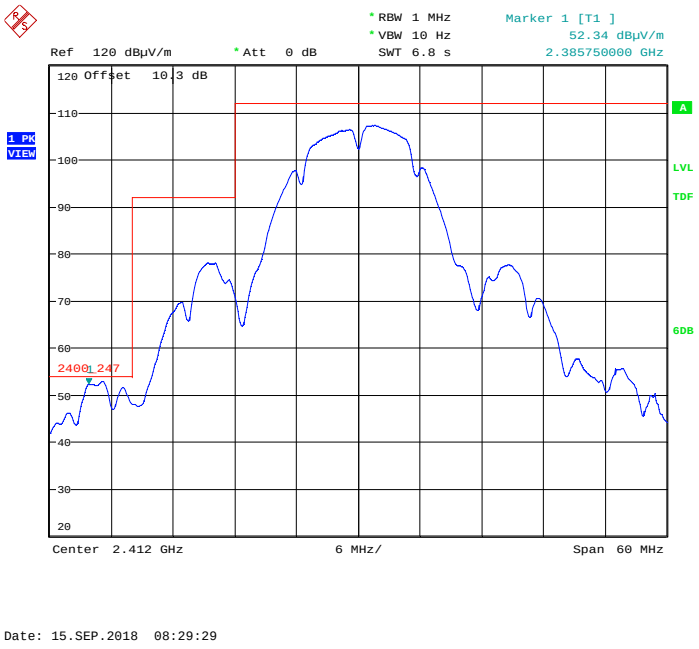
Plot 5.4.4.1.2.24. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
1 Mbps DBPSK, Power Setting 30, Channel 9, 2452 MHz



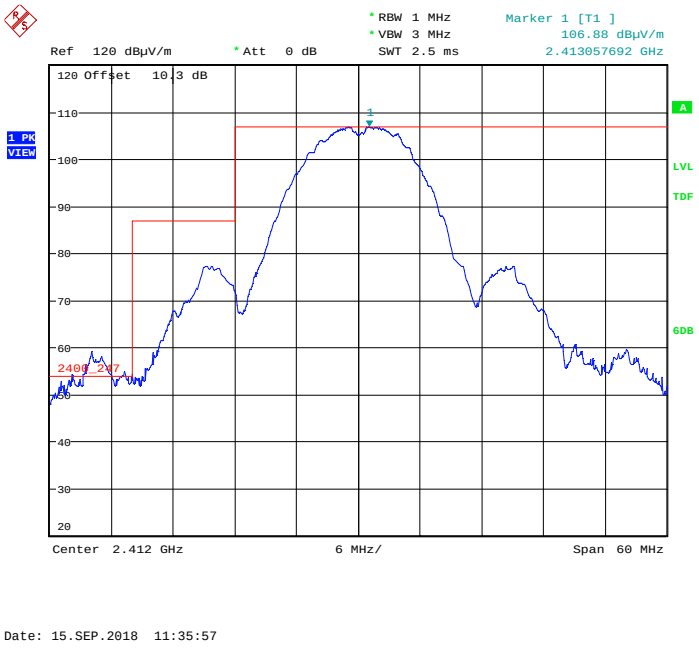
Plot 5.4.4.1.2.25. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
2 Mbps DQPSK, Power Setting 26, Channel 1, 2412 MHz



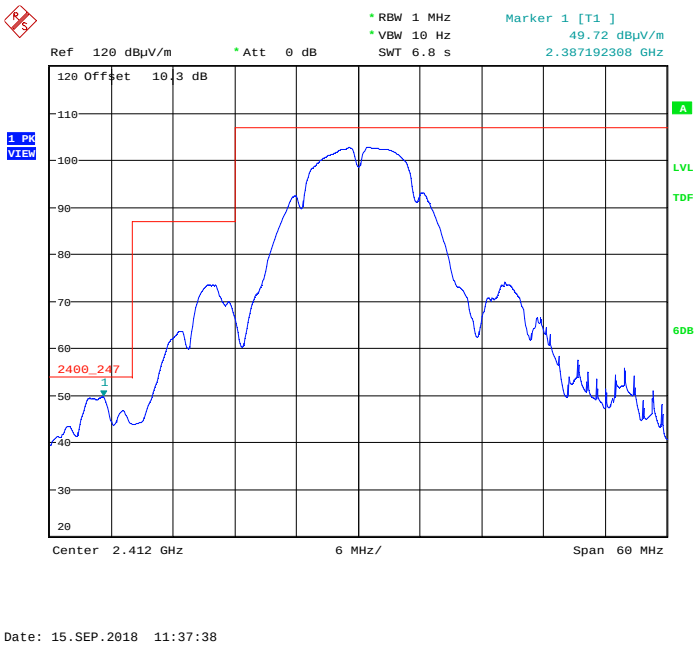
Plot 5.4.4.1.2.26. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
2 Mbps DQPSK, Power Setting 26, Channel 1, 2412 MHz



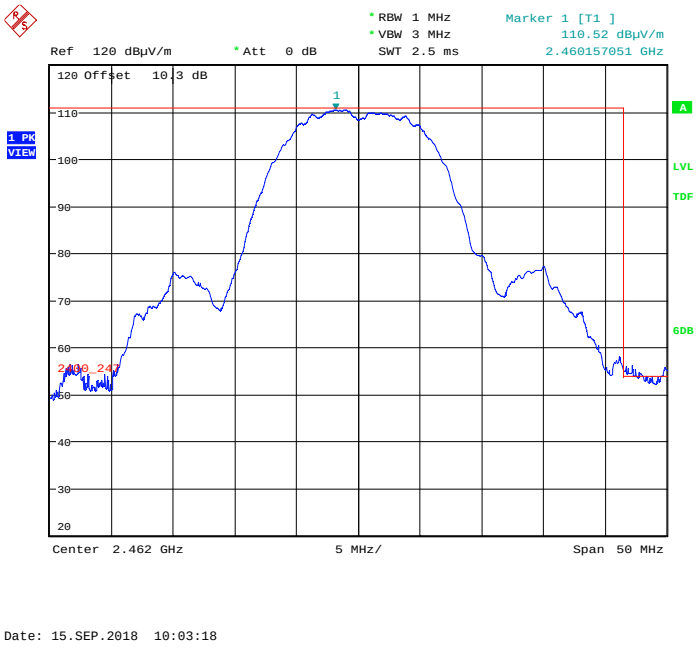
Plot 5.4.4.1.2.27. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
2 Mbps DQPSK, Power Setting 26, Channel 1, 2412 MHz



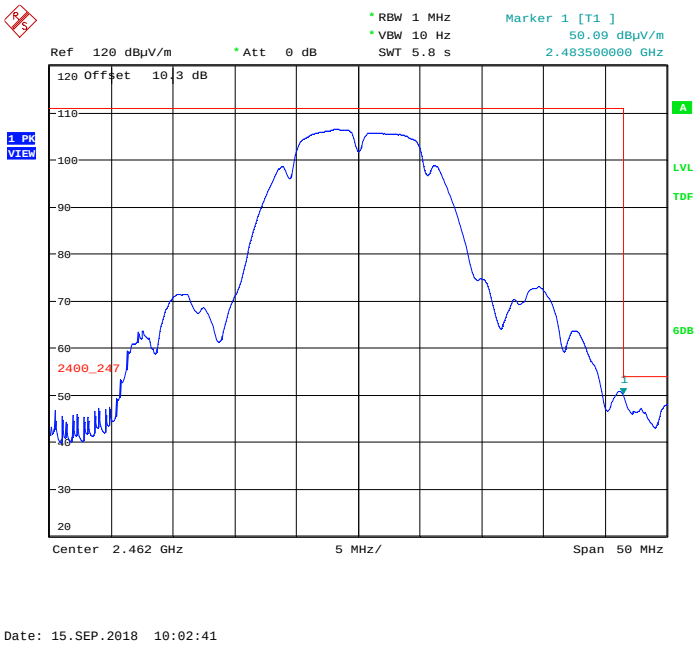
Plot 5.4.4.1.2.28. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
2 Mbps DQPSK, Power Setting 26, Channel 1, 2412 MHz



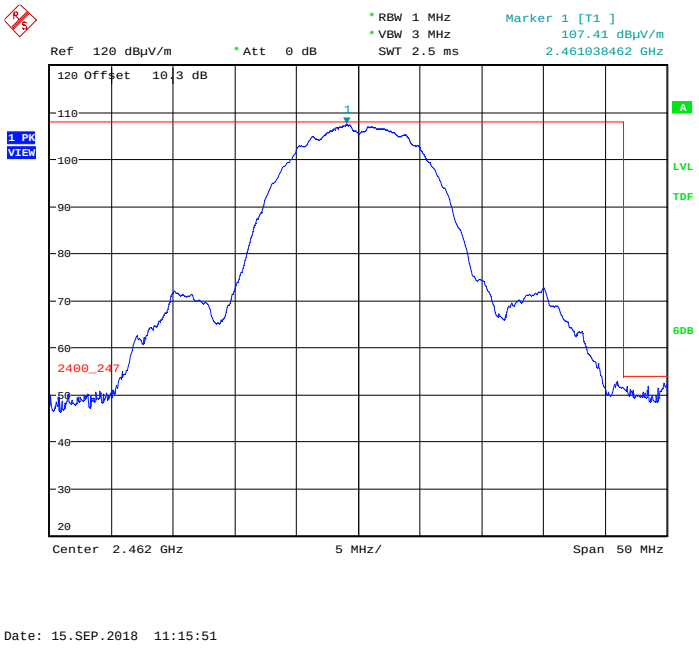
Plot 5.4.4.1.2.29. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
2 Mbps DQPSK, Power Setting 25, Channel 11, 2462 MHz



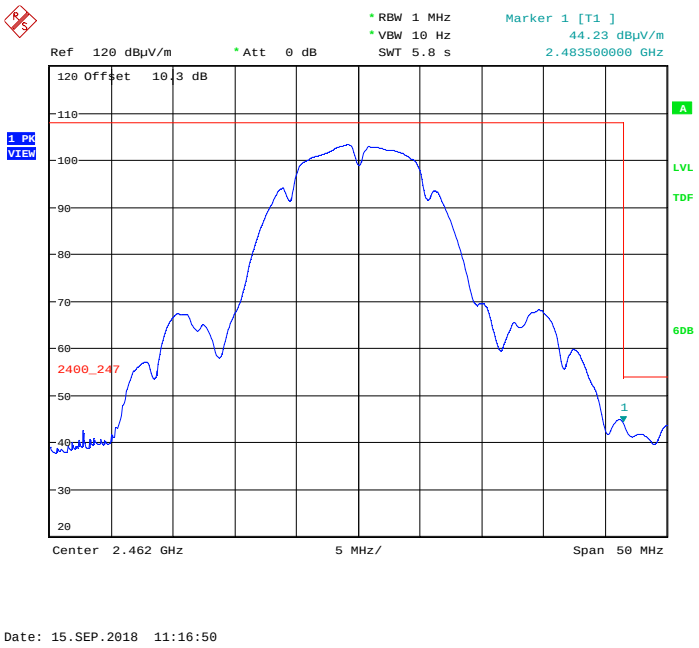
Plot 5.4.4.1.2.30. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
2 Mbps DQPSK, Power Setting 25, Channel 11, 2462 MHz



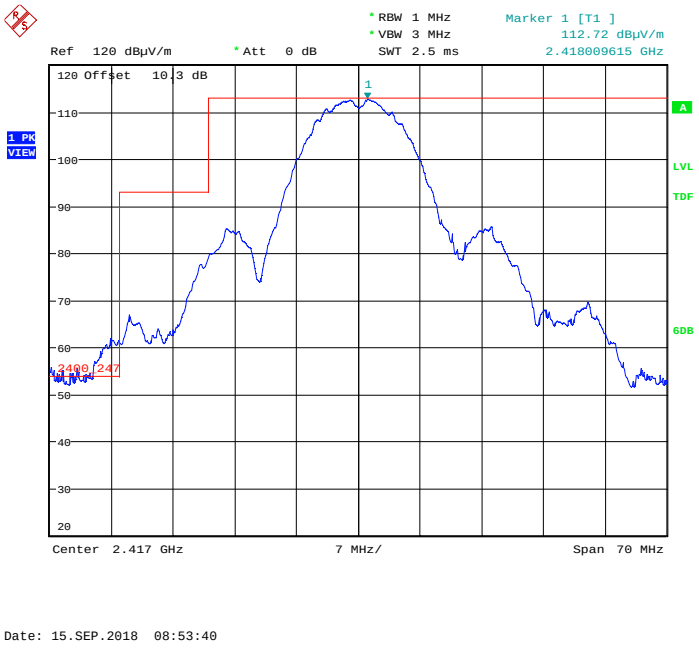
Plot 5.4.4.1.2.31. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
2 Mbps DQPSK, Power Setting 25, Channel 11, 2462 MHz



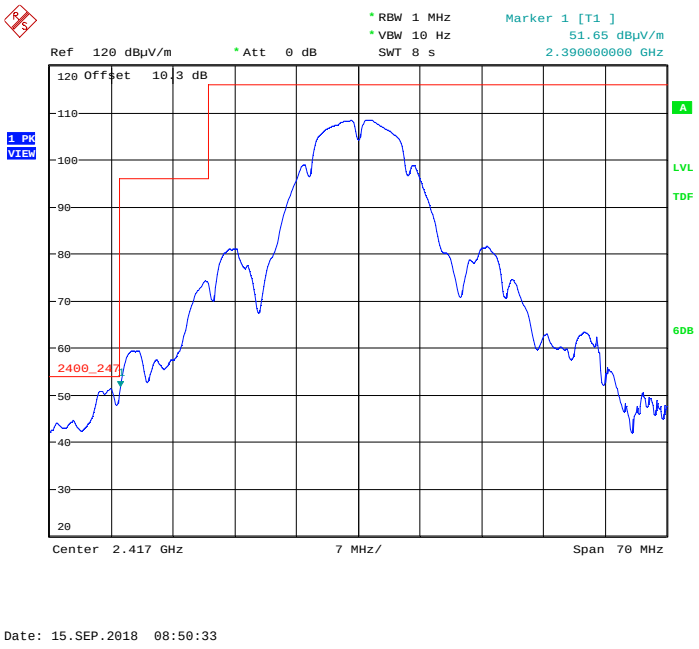
Plot 5.4.4.1.2.32. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
2 Mbps DQPSK, Power Setting 25, Channel 11, 2462 MHz



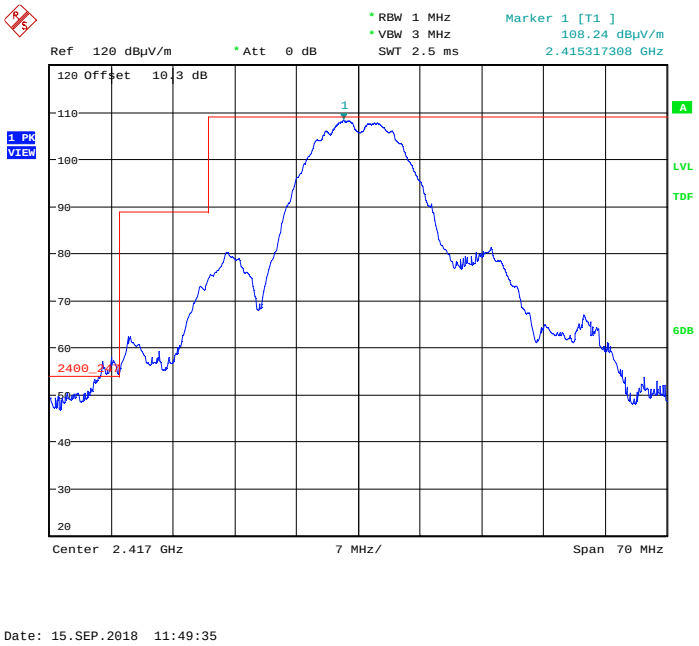
Plot 5.4.4.1.2.33. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
2 Mbps DQPSK, Power Setting 28, Channel 2, 2417 MHz



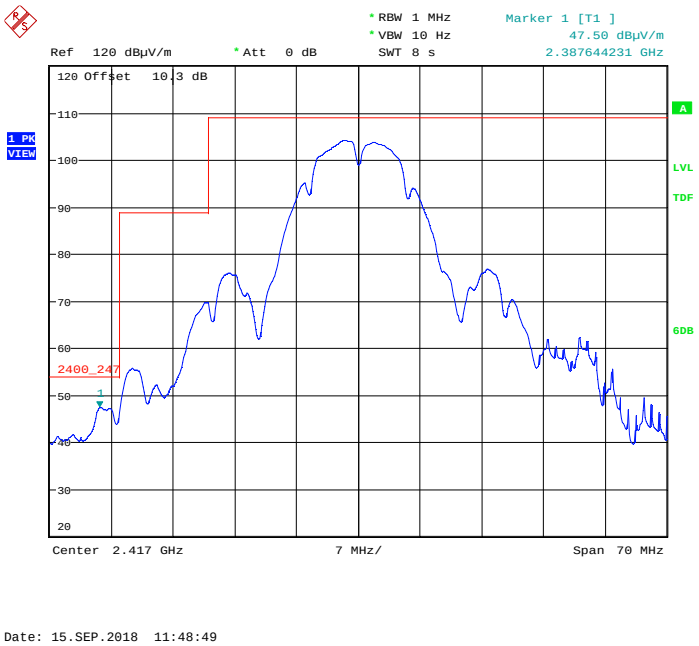
Plot 5.4.4.1.2.34. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
2 Mbps DQPSK, Power Setting 28, Channel 2, 2417 MHz



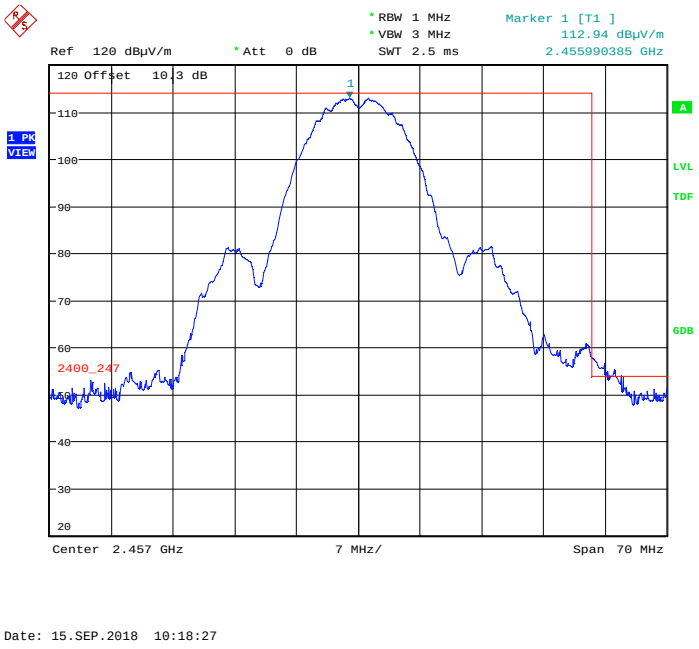
Plot 5.4.4.1.2.35. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
2 Mbps DQPSK, Power Setting 28, Channel 2, 2417 MHz



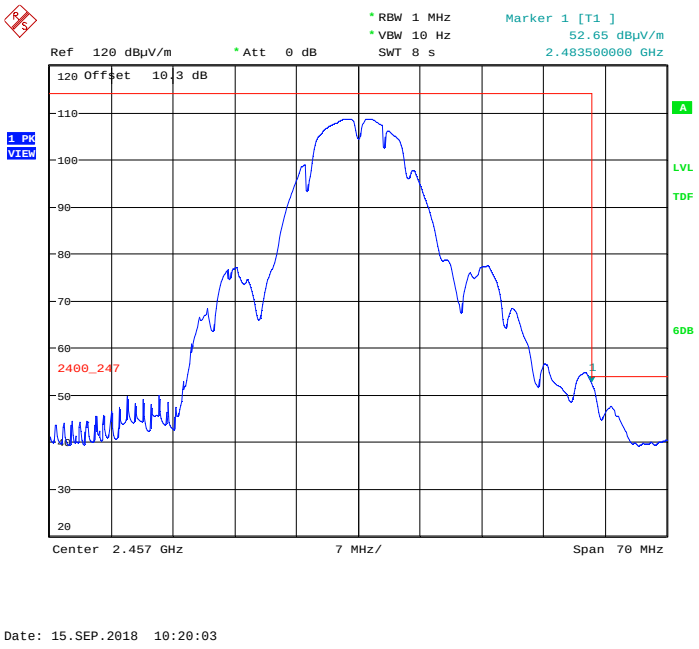
Plot 5.4.4.1.2.36. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
2 Mbps DQPSK, Power Setting 28, Channel 2, 2417 MHz



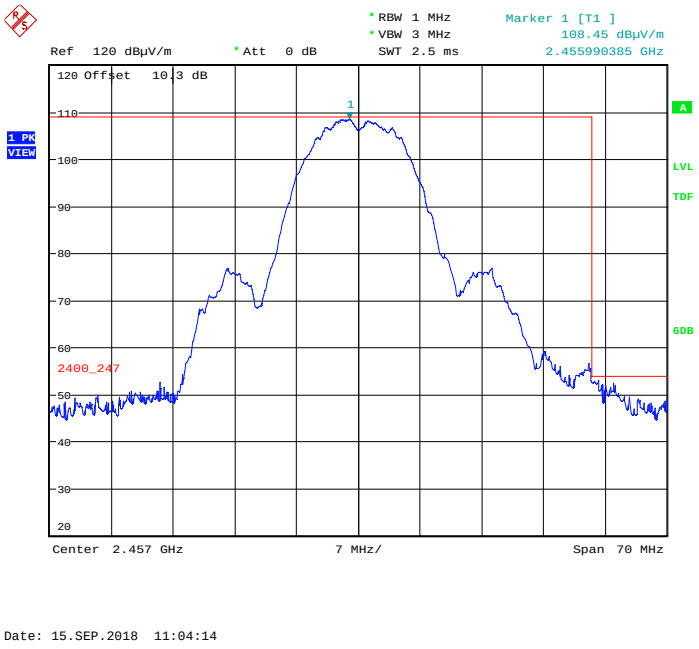
Plot 5.4.4.1.2.37. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
2 Mbps DQPSK, Power Setting 27, Channel 10, 2457 MHz



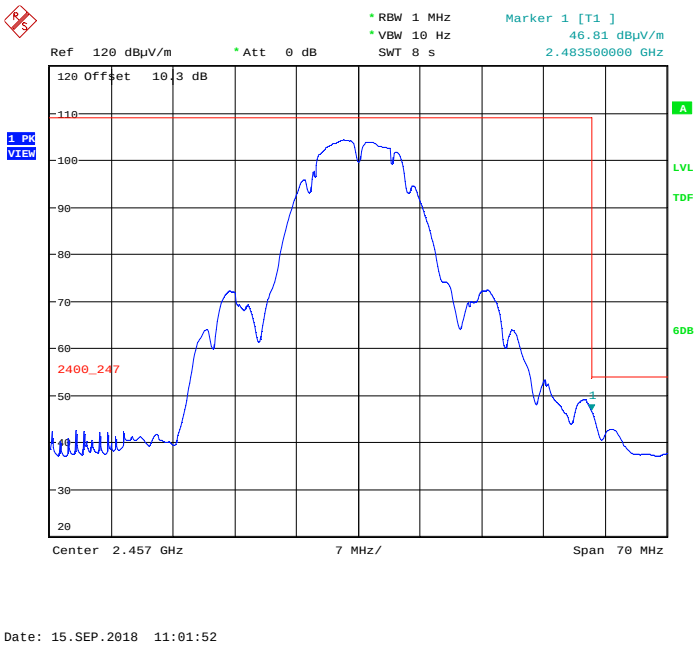
Plot 5.4.4.1.2.38. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
2 Mbps DQPSK, Power Setting 27, Channel 10, 2457 MHz



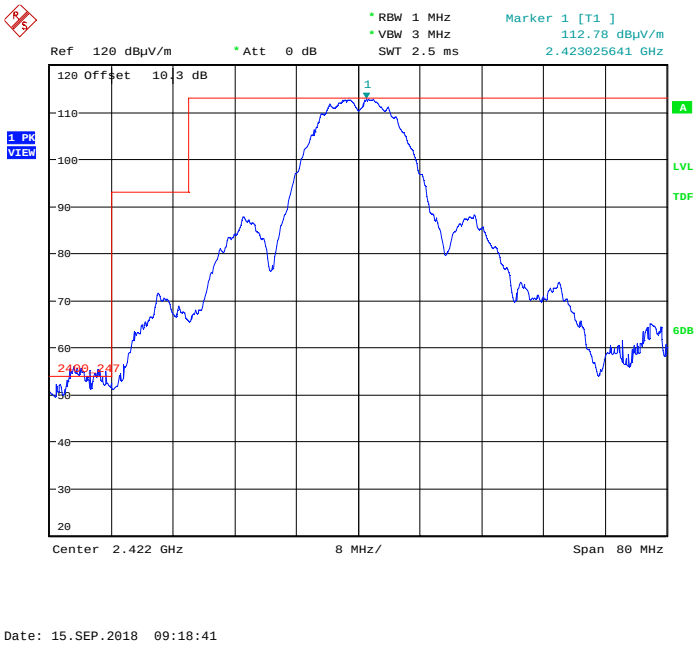
Plot 5.4.4.1.2.39. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
2 Mbps DQPSK, Power Setting 27, Channel 10, 2457 MHz



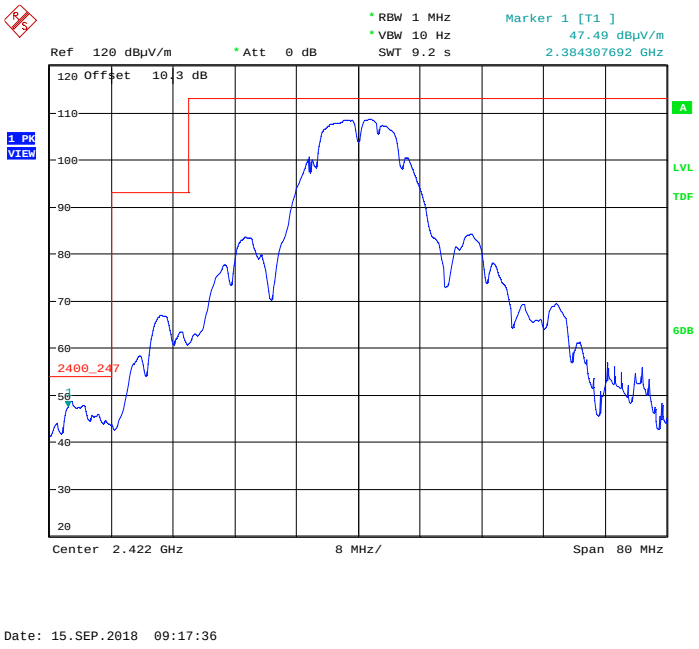
Plot 5.4.4.1.2.40. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
2 Mbps DQPSK, Power Setting 27, Channel 10, 2457 MHz



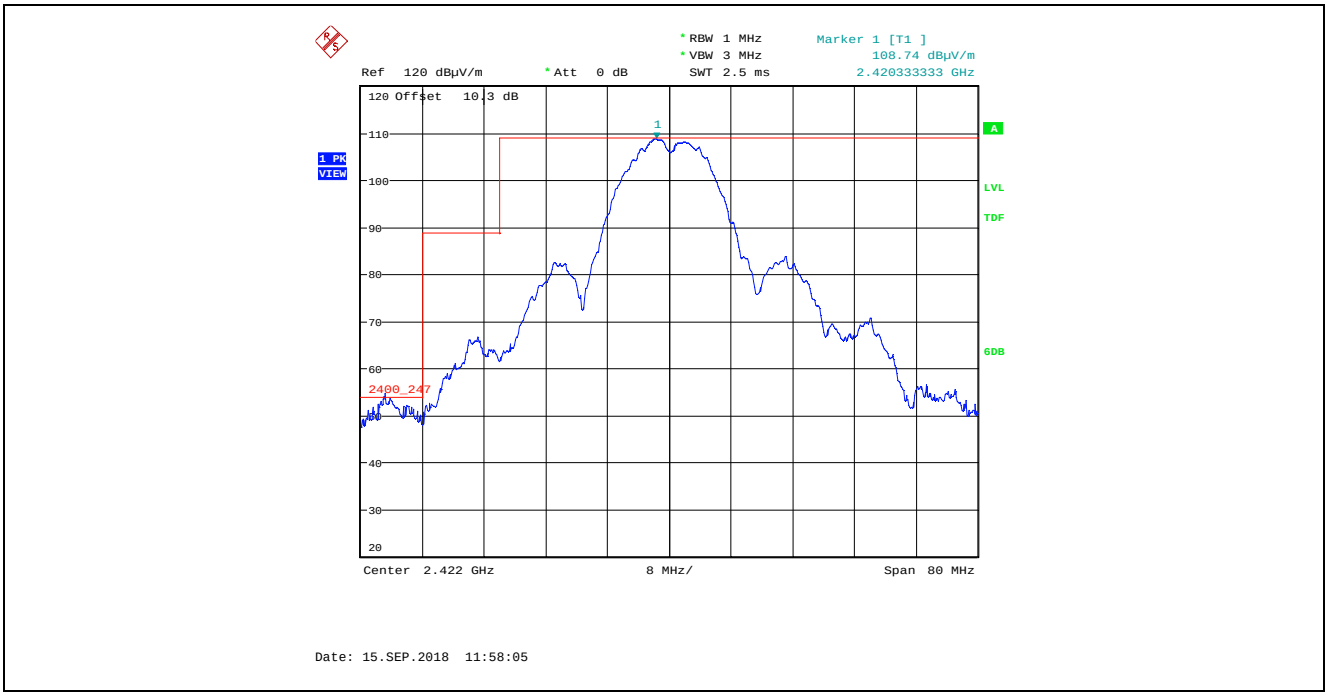
Plot 5.4.4.1.2.41. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
2 Mbps DQPSK, Power Setting 30, Channel 3, 2422 MHz



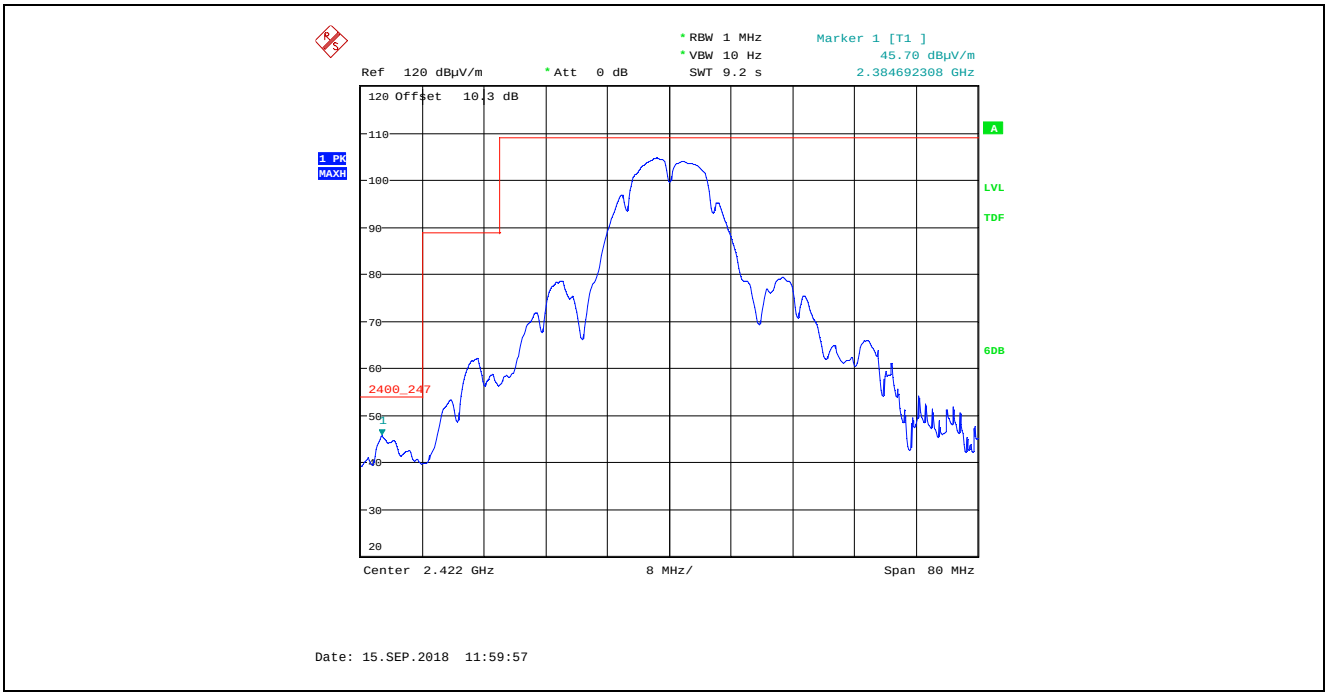
Plot 5.4.4.1.2.42. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
2 Mbps DQPSK, Power Setting 30, Channel 3, 2422 MHz



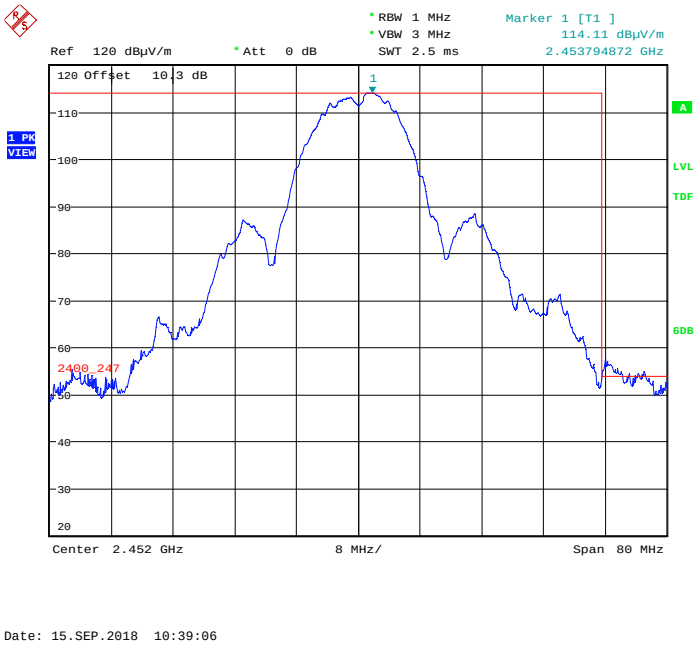
Plot 5.4.4.1.2.43. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
2 Mbps DQPSK, Power Setting 30, Channel 3, 2422 MHz



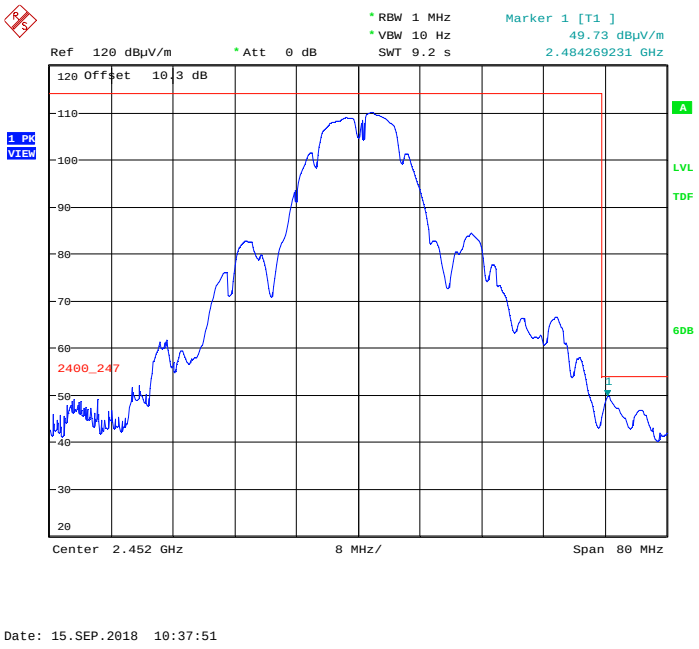
Plot 5.4.4.1.2.44. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
2 Mbps DQPSK, Power Setting 30, Channel 3, 2422 MHz



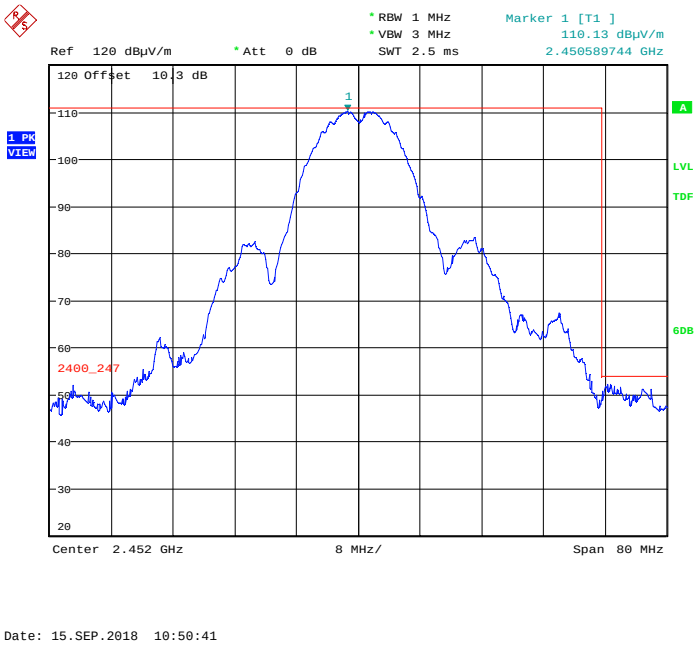
Plot 5.4.4.1.2.45. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
2 Mbps DQPSK, Power Setting 30, Channel 9, 2452 MHz



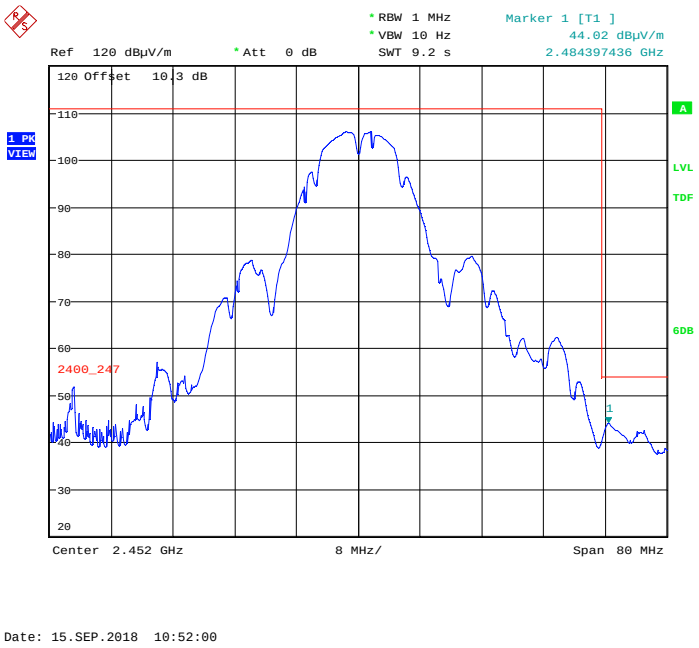
Plot 5.4.4.1.2.46. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
2 Mbps DQPSK, Power Setting 30, Channel 9, 2452 MHz



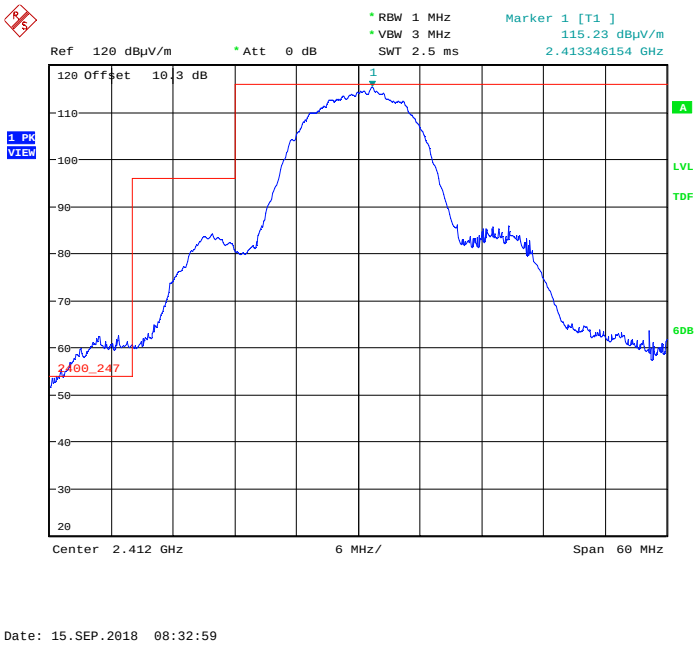
Plot 5.4.4.1.2.47. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
2 Mbps DQPSK, Power Setting 30, Channel 9, 2452 MHz



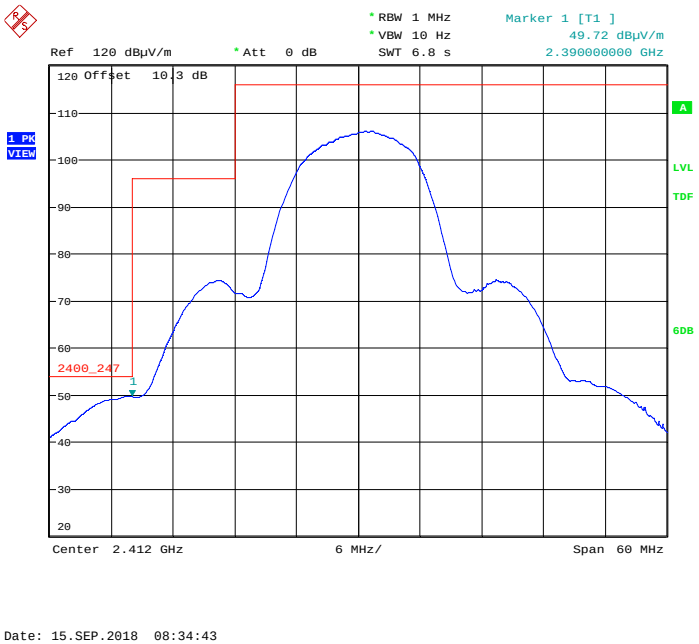
Plot 5.4.4.1.2.48. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
2 Mbps DQPSK, Power Setting 30, Channel 9, 2452 MHz



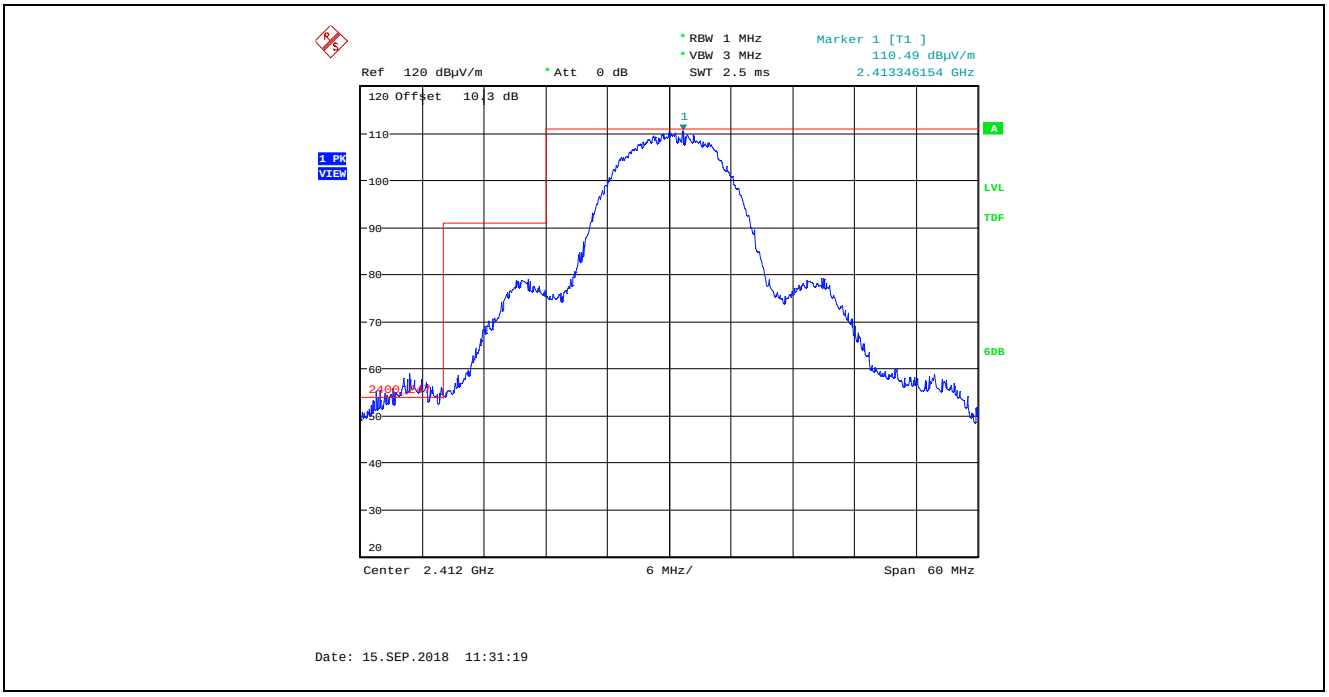
Plot 5.4.4.1.2.49. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
11 Mbps CCK, Power Setting 26, Channel 1, 2412 MHz



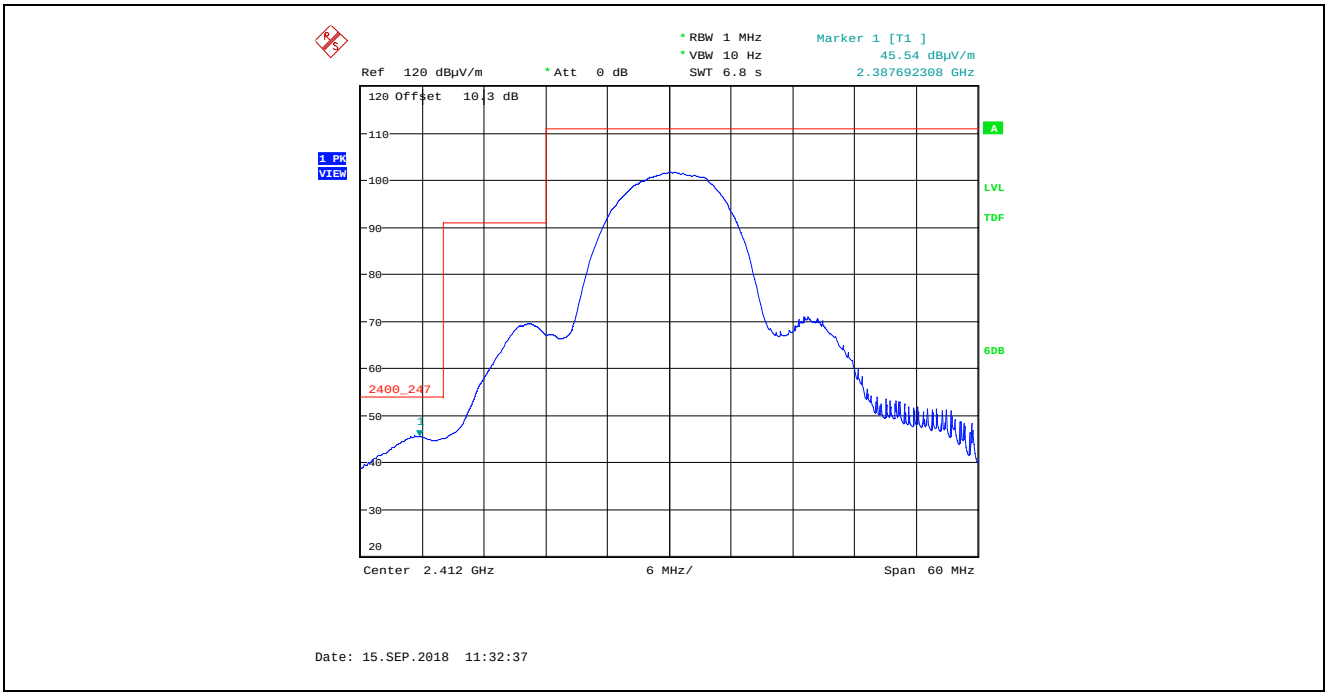
Plot 5.4.4.1.2.50. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
11 Mbps CCK, Power Setting 26, Channel 1, 2412 MHz



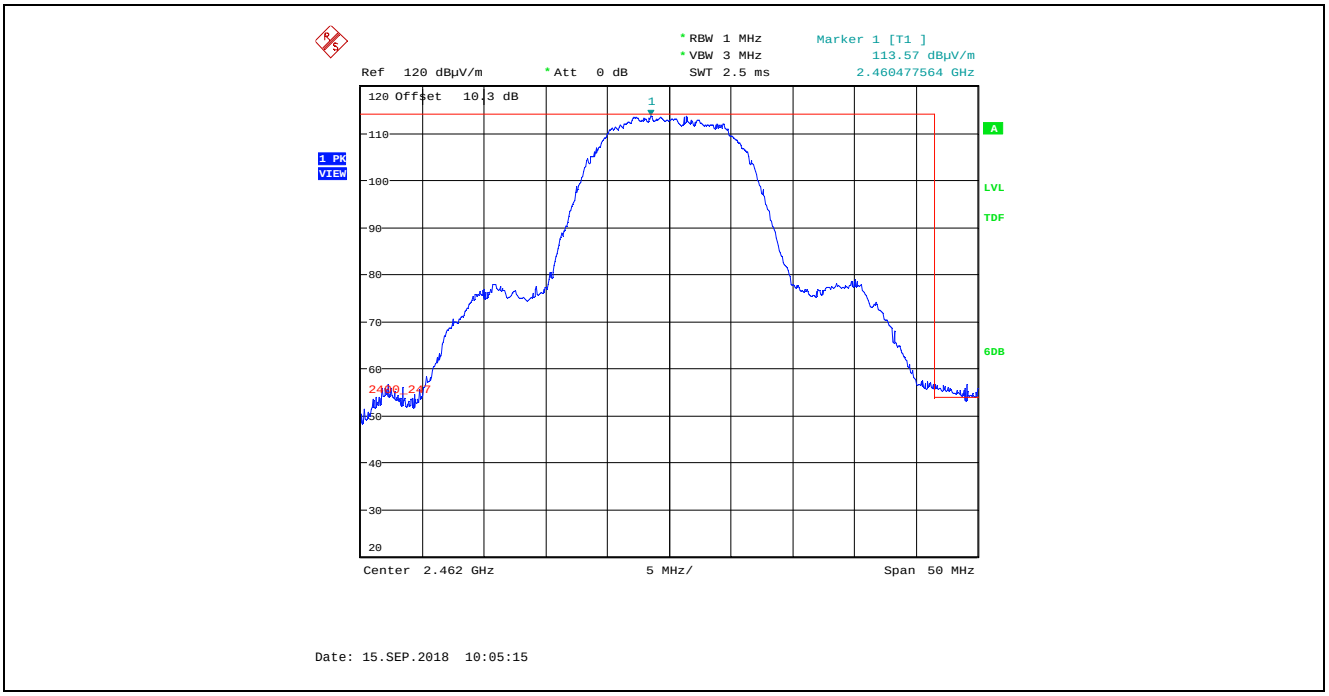
Plot 5.4.4.1.2.51. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
11 Mbps CCK, Power Setting 26, Channel 1, 2412 MHz



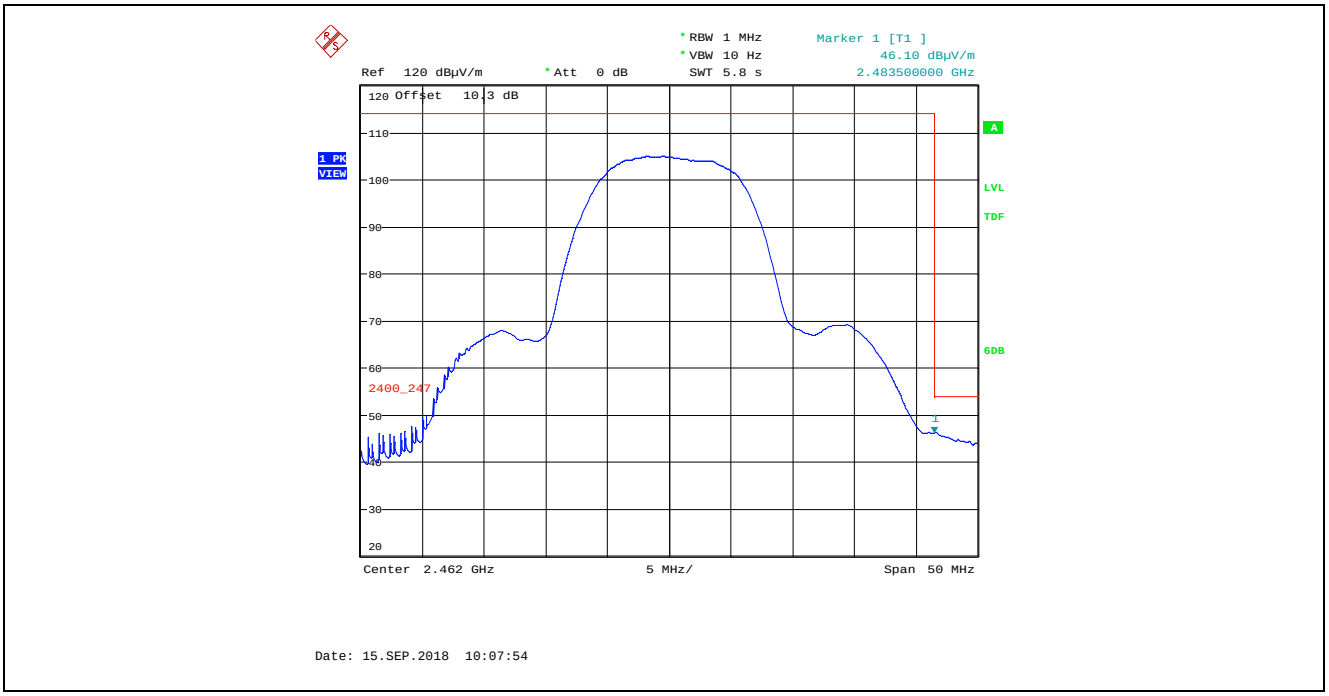
Plot 5.4.4.1.2.52. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
11 Mbps CCK, Power Setting 26, Channel 1, 2412 MHz



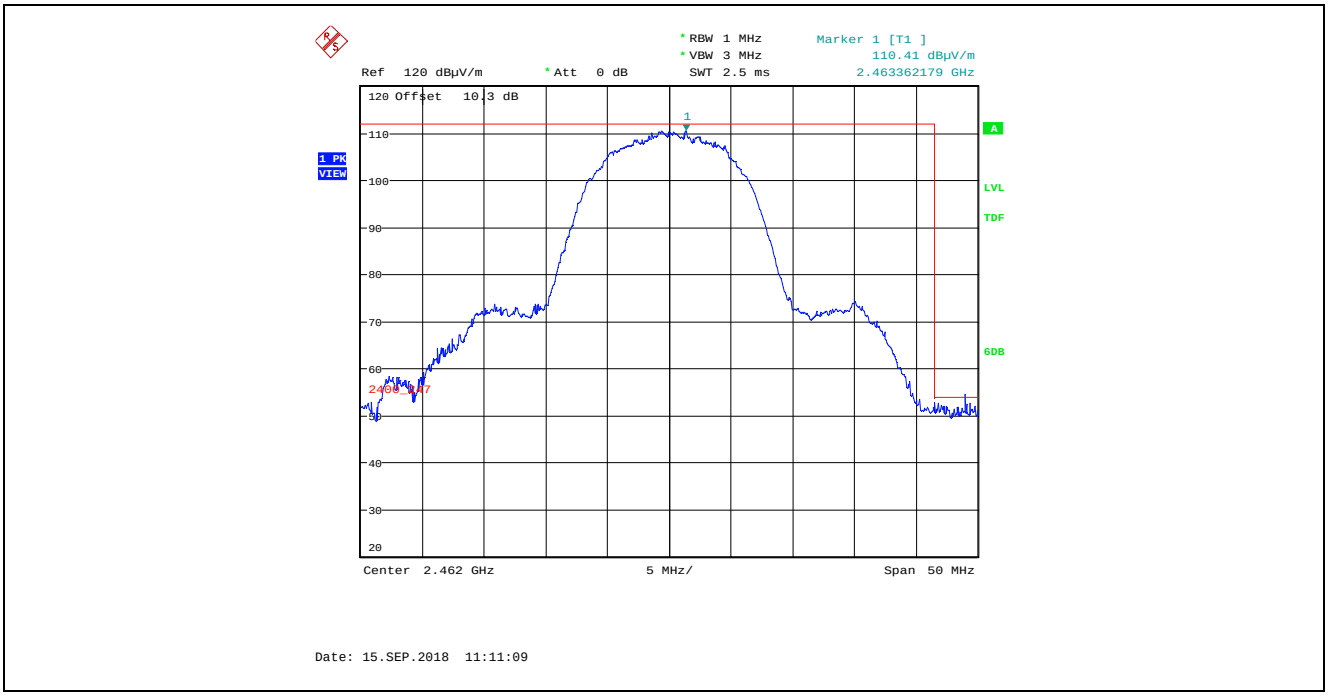
Plot 5.4.4.1.2.53. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
11 Mbps CCK, Power Setting 25, Channel 11, 2462 MHz



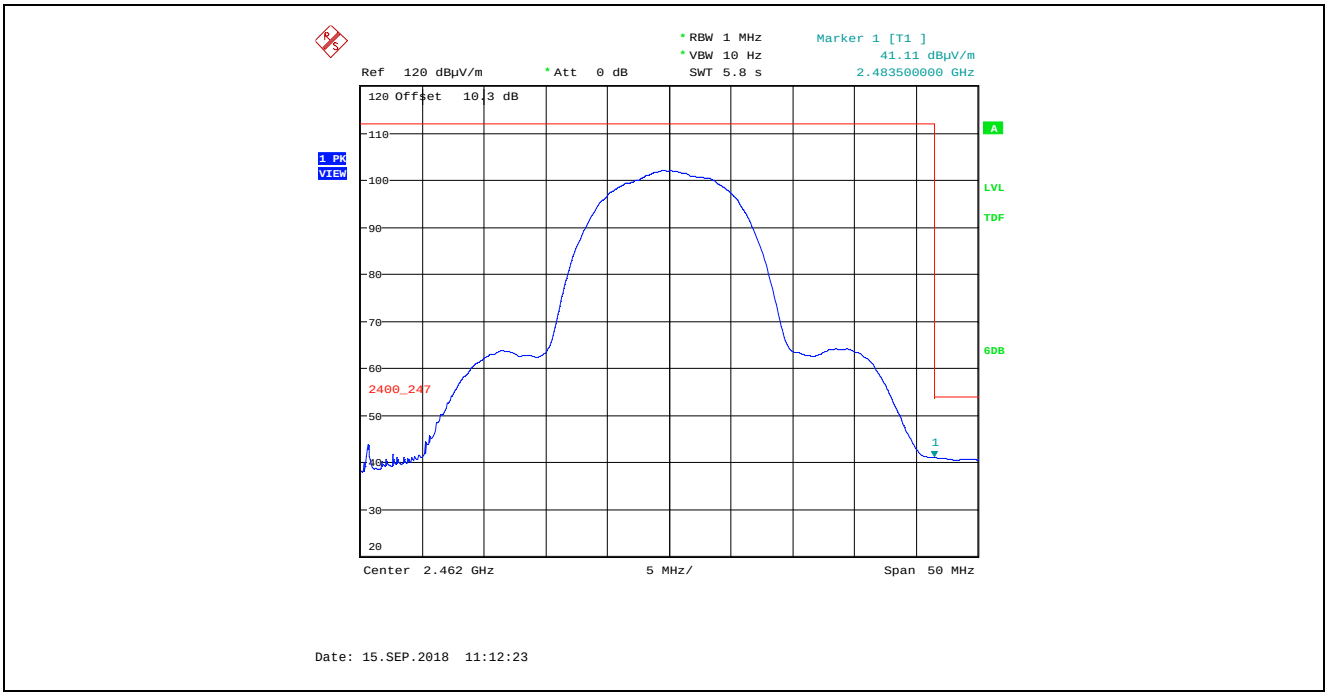
Plot 5.4.4.1.2.54. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
11 Mbps CCK, Power Setting 25, Channel 11, 2462 MHz



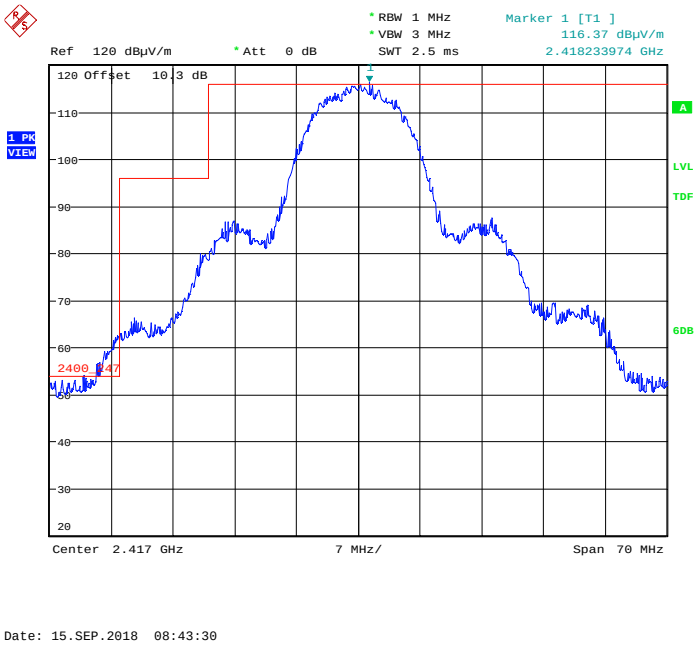
Plot 5.4.4.1.2.55. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
11 Mbps CCK, Power Setting 25, Channel 11, 2462 MHz



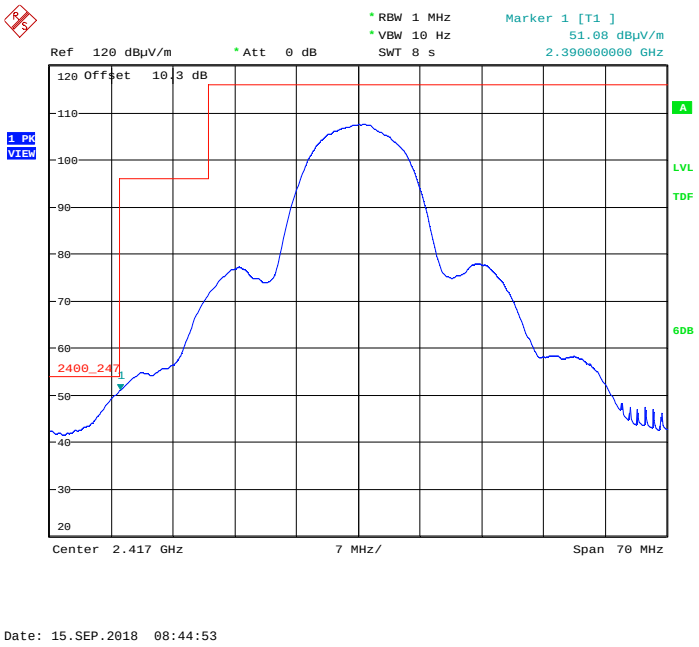
Plot 5.4.4.1.2.56. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
11 Mbps CCK, Power Setting 25, Channel 11, 2462 MHz



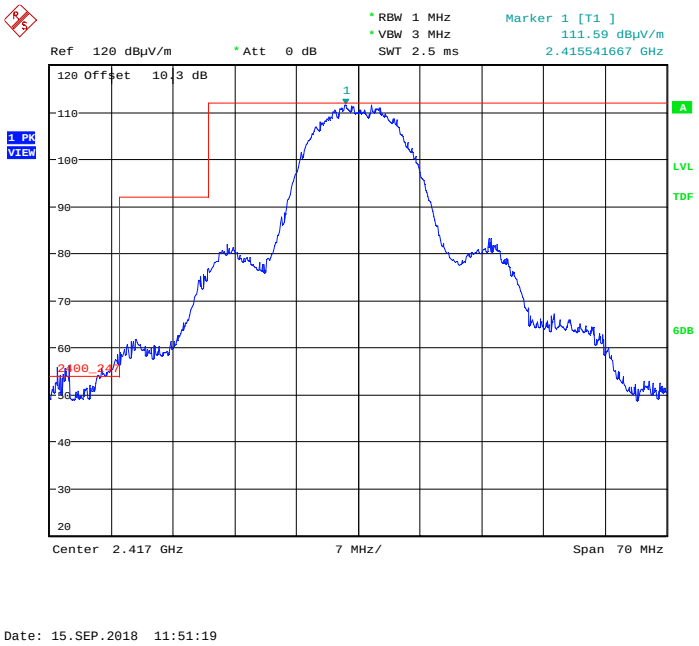
Plot 5.4.4.1.2.57. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
11 Mbps CCK, Power Setting 28, Channel 2, 2417 MHz



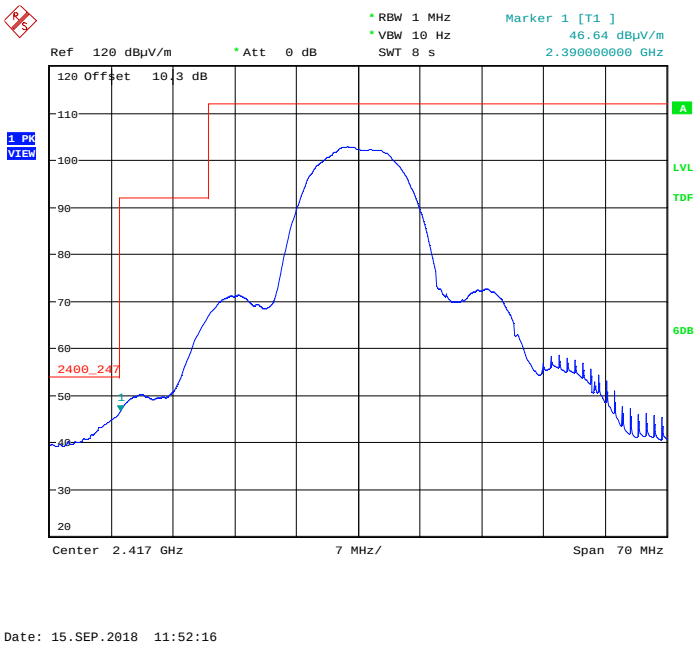
Plot 5.4.4.1.2.58. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
11 Mbps CCK, Power Setting 28, Channel 2, 2417 MHz



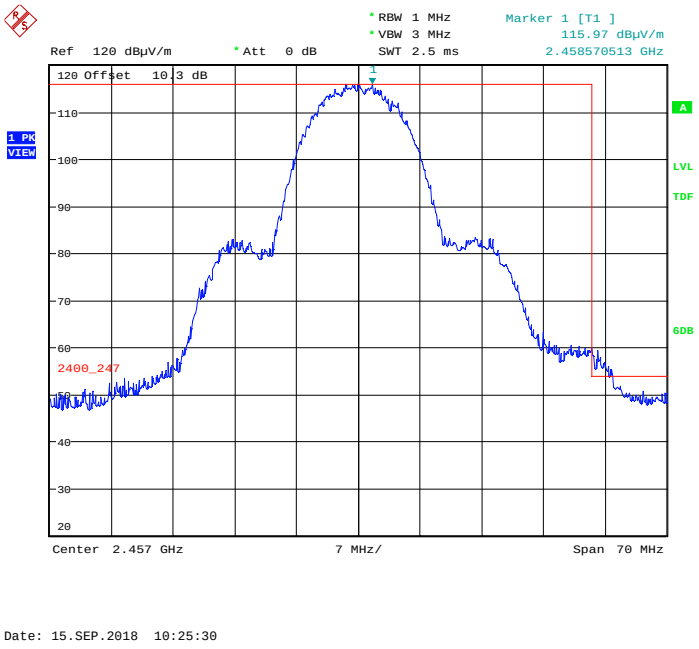
Plot 5.4.4.1.2.59. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
11 Mbps CCK, Power Setting 28, Channel 2, 2417 MHz



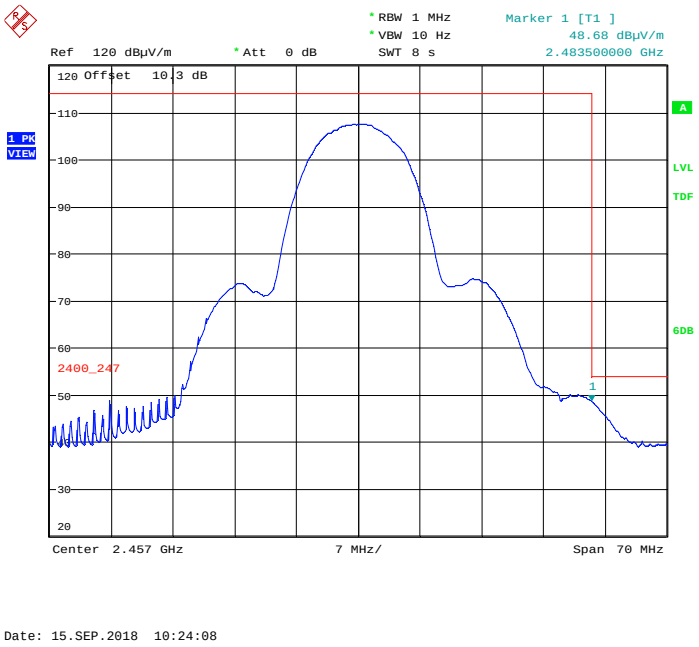
Plot 5.4.4.1.2.60. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
11 Mbps CCK, Power Setting 28, Channel 2, 2417 MHz



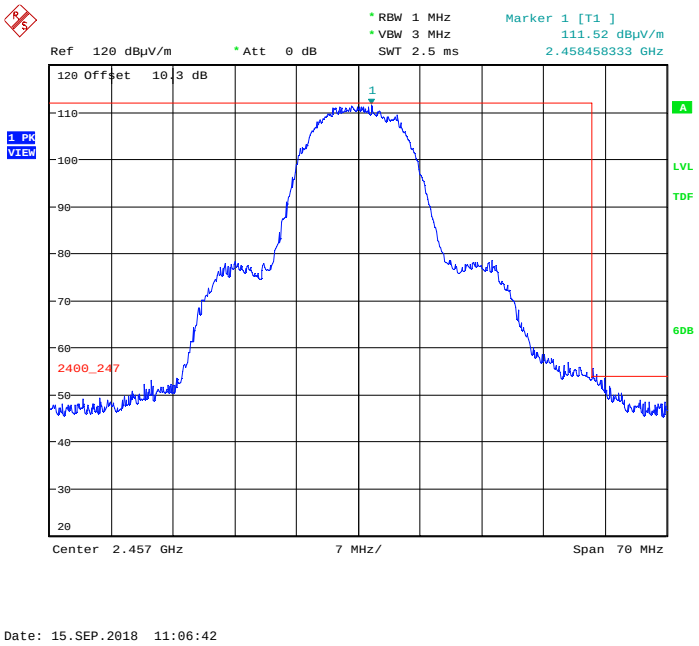
Plot 5.4.4.1.2.61. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
11 Mbps CCK, Power Setting 27, Channel 10, 2457 MHz



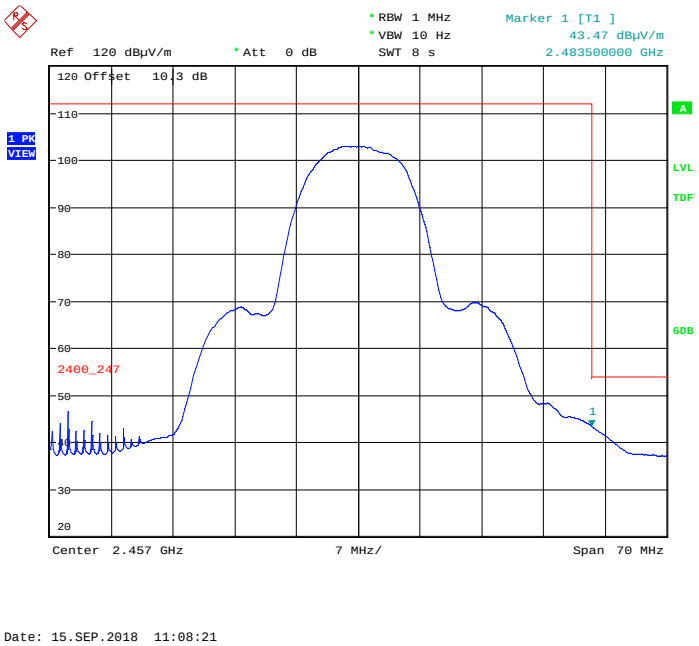
Plot 5.4.4.1.2.62. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
11 Mbps CCK, Power Setting 27, Channel 10, 2457 MHz



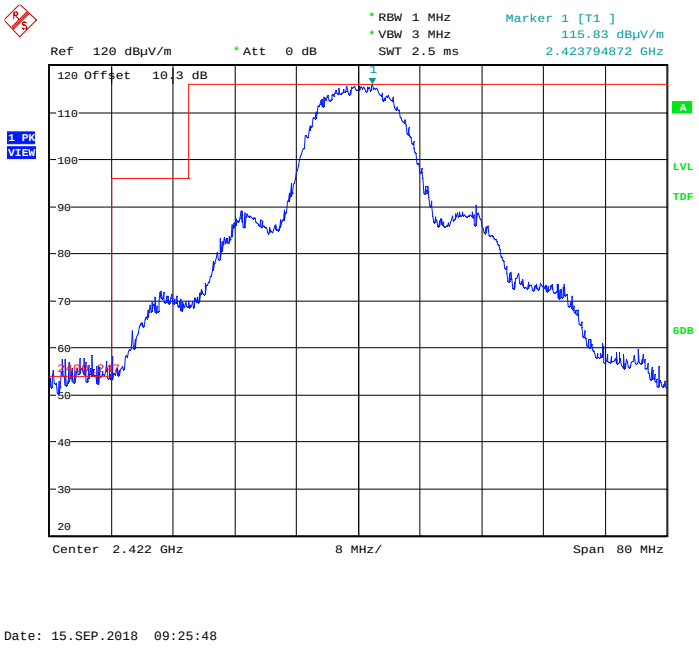
Plot 5.4.4.1.2.63. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
11 Mbps CCK, Power Setting 27, Channel 10, 2457 MHz



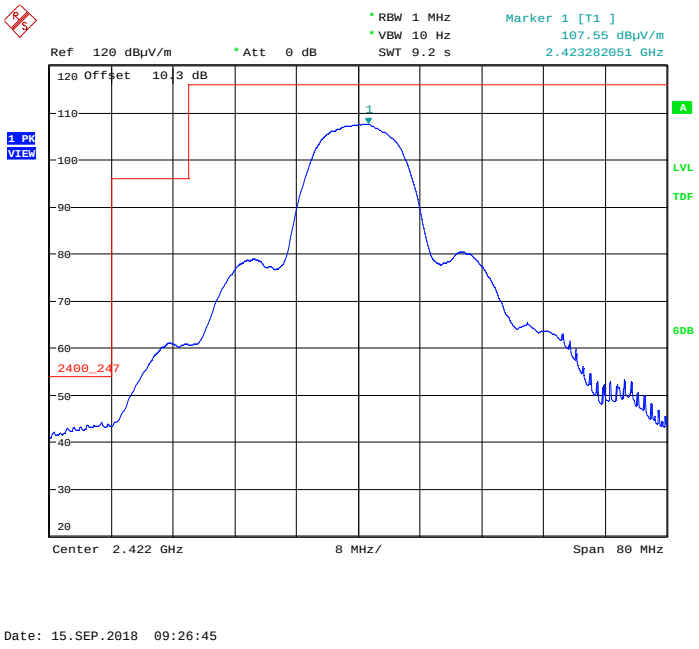
Plot 5.4.4.1.2.64. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
11 Mbps CCK, Power Setting 27, Channel 10, 2457 MHz



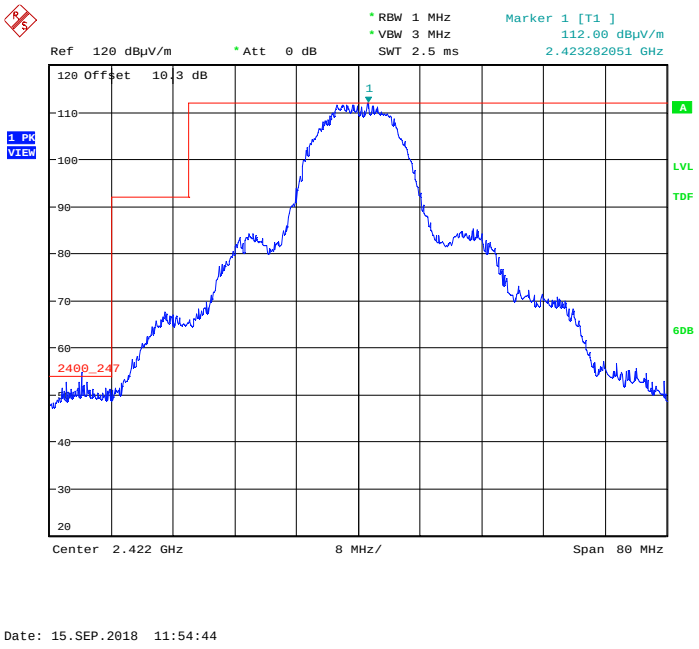
Plot 5.4.4.1.2.65. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
11 Mbps CCK, Power Setting 30, Channel 3, 2422 MHz



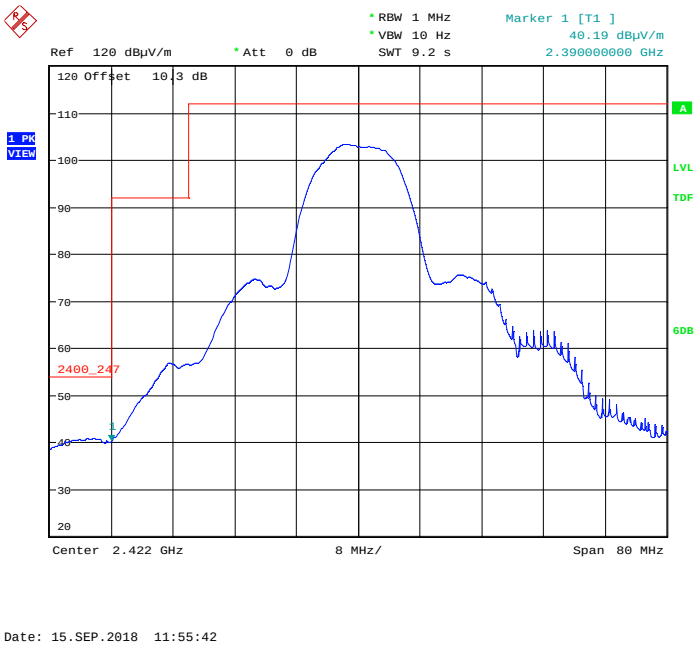
Plot 5.4.4.1.2.66. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
11 Mbps CCK, Power Setting 30, Channel 3, 2422 MHz



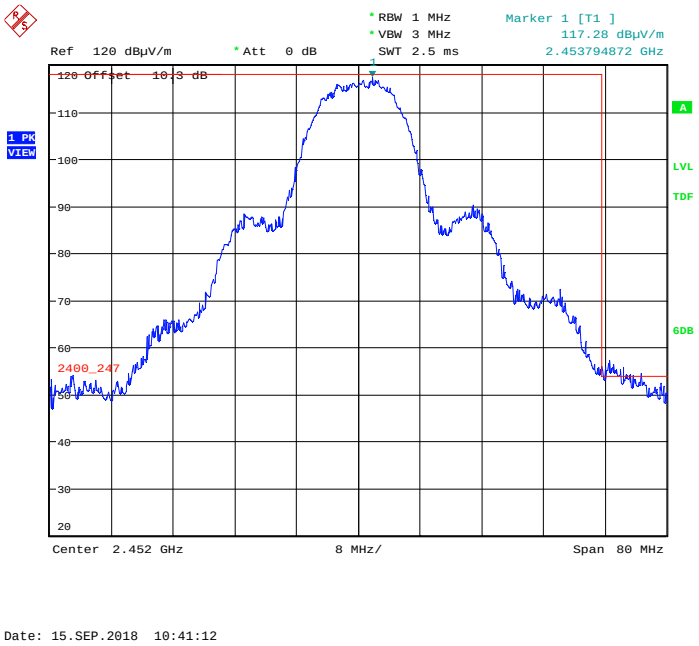
Plot 5.4.4.1.2.67. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
11 Mbps CCK, Power Setting 30, Channel 3, 2422 MHz



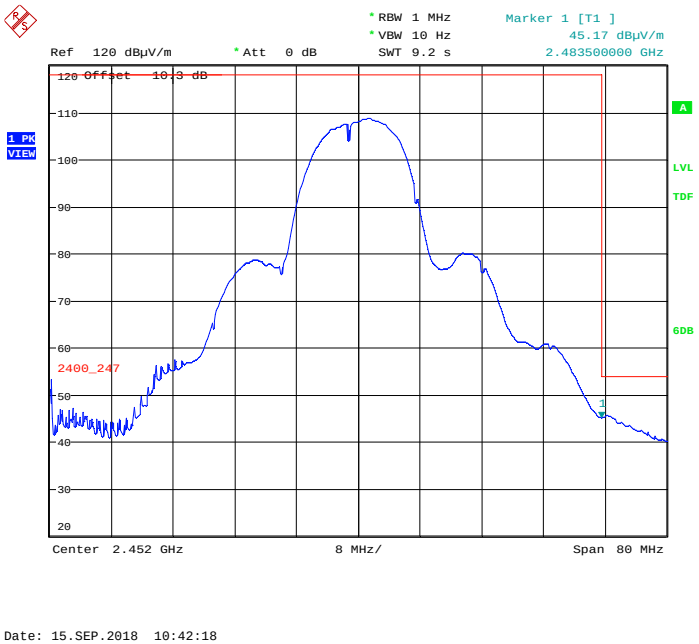
Plot 5.4.4.1.2.68. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
11 Mbps CCK, Power Setting 30, Channel 3, 2422 MHz



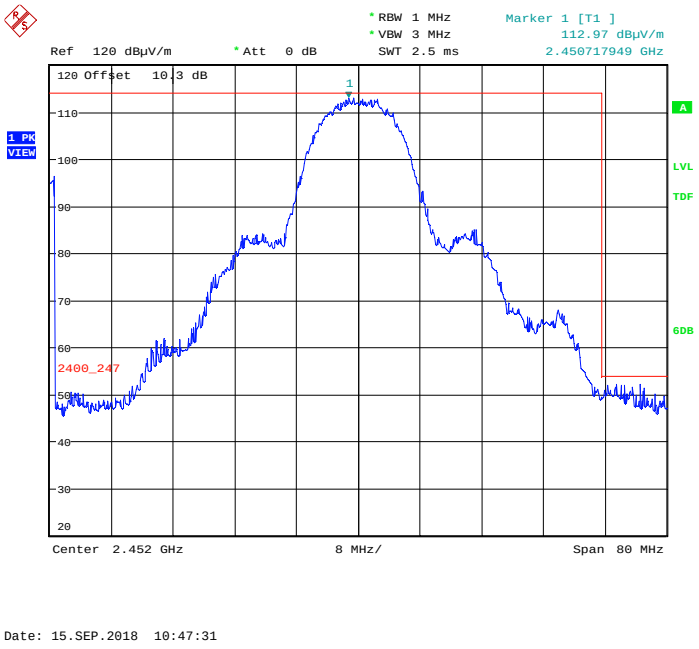
Plot 5.4.4.1.2.69. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
11 Mbps CCK, Power Setting 30, Channel 9, 2452 MHz



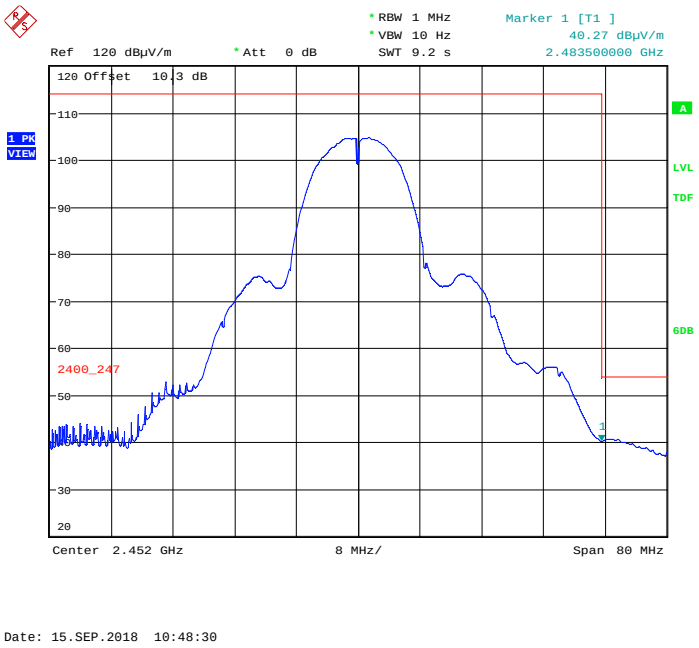
Plot 5.4.4.1.2.70. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
11 Mbps CCK, Power Setting 30, Channel 9, 2452 MHz



Plot 5.4.4.1.2.71. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
11 Mbps CCK, Power Setting 30, Channel 9, 2452 MHz



Plot 5.4.4.1.2.72. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
11 Mbps CCK, Power Setting 30, Channel 9, 2452 MHz



5.4.4.1.3. Spurious Radiated Emissions for 802.11g 54 Mbps 64-QAM

Fundamental Frequency:	2412 MHz
Frequency Test Range:	30 MHz – 25 GHz
Power Setting:	21 (for fundamental)
	30 (for spurious emissions)

Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
2412	104.68	--	V	--	--	--	--
2412	107.33	--	H	--	--	--	--
4824	48.96	35.03	V	54.0	87.3	-19.0	Pass*
4824	49.00	34.80	H	54.0	87.3	-19.2	Pass*

*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:	2437 MHz
Frequency Test Range:	30 MHz – 25 GHz
Power Setting:	30 (for fundamental)
	30 (for spurious emissions)

Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
2437	111.05	--	V	--	--	--	--
2437	114.69	--	H	--	--	--	--
*	*	*	V/H	*	*	*	*

*Spurious emissions are more than 20 dB below the applicable limit

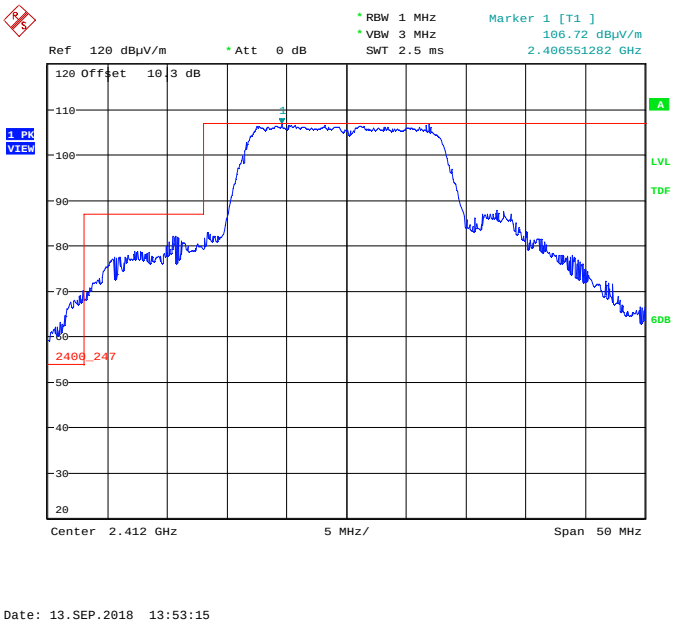
Fundamental Frequency:	2462 MHz
Frequency Test Range:	30 MHz – 25 GHz
Power Setting:	25 (for fundamental)
	30 (for spurious emissions)

Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
2462	104.06	--	V	--	--	--	--
2462	110.36	--	H	--	--	--	--
*	*	*	V/H	*	*	*	*

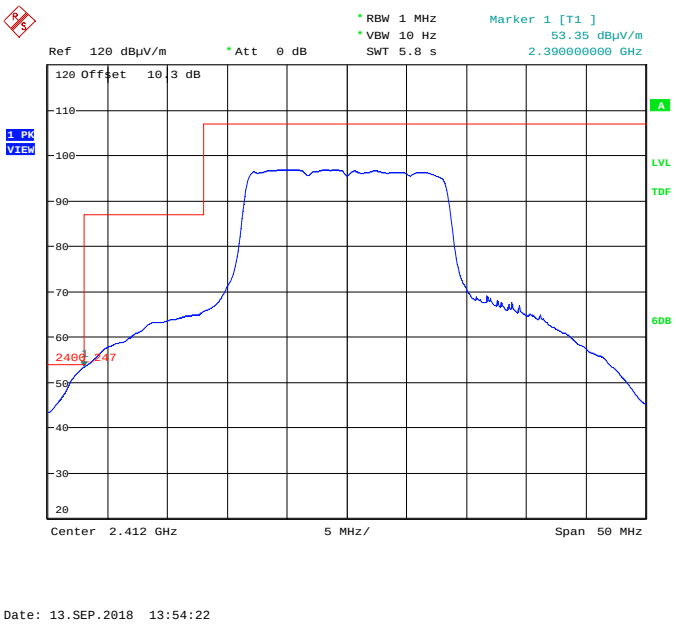
*Spurious emissions are more than 20 dB below the applicable limit

5.4.4.1.4. Band–Edge RF Radiated Emissions for 802.11g

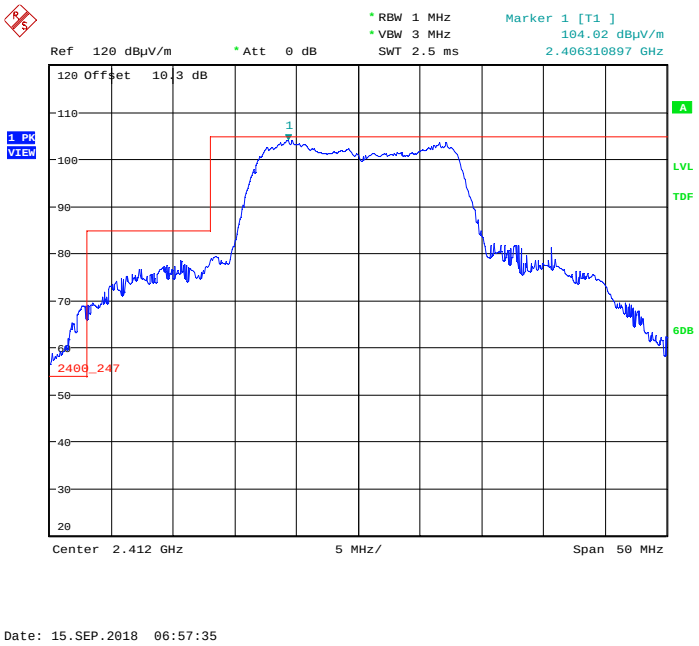
Plot 5.4.4.1.4.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 21, Channel 1, 2412 MHz



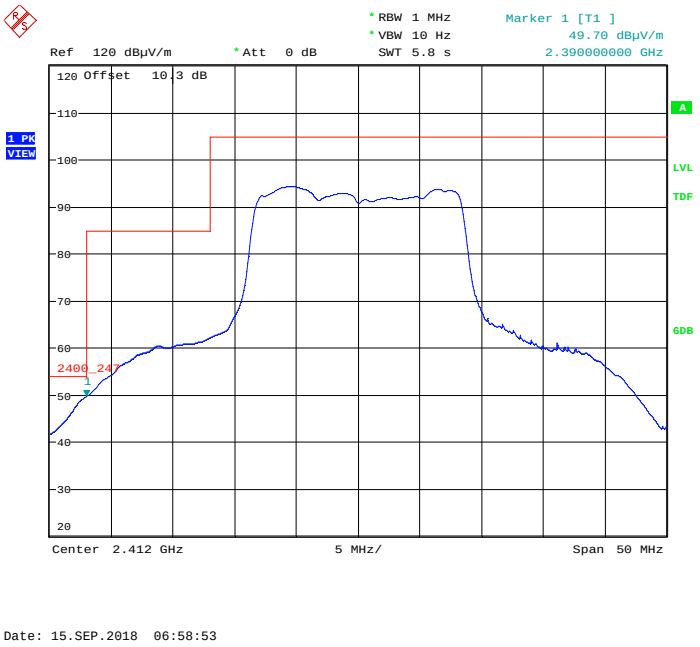
Plot 5.4.4.1.4.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 21, Channel 1, 2412 MHz



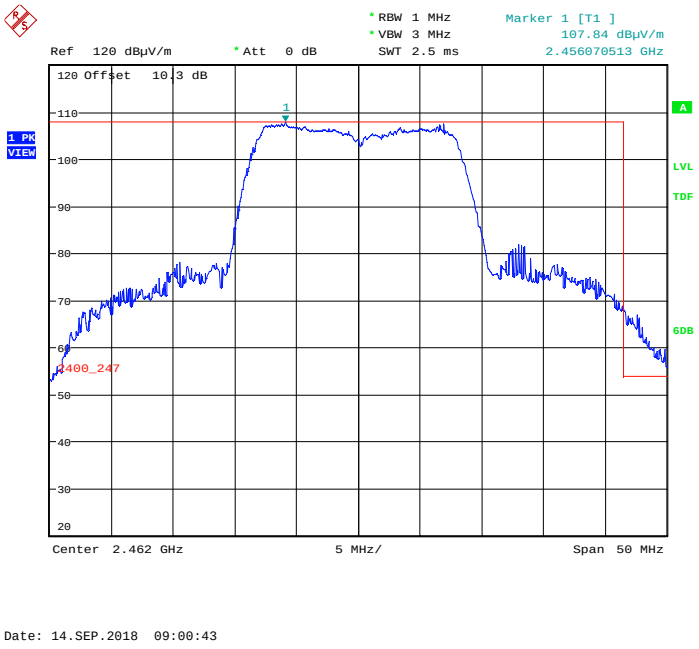
Plot 5.4.4.1.4.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 21, Channel 1, 2412 MHz



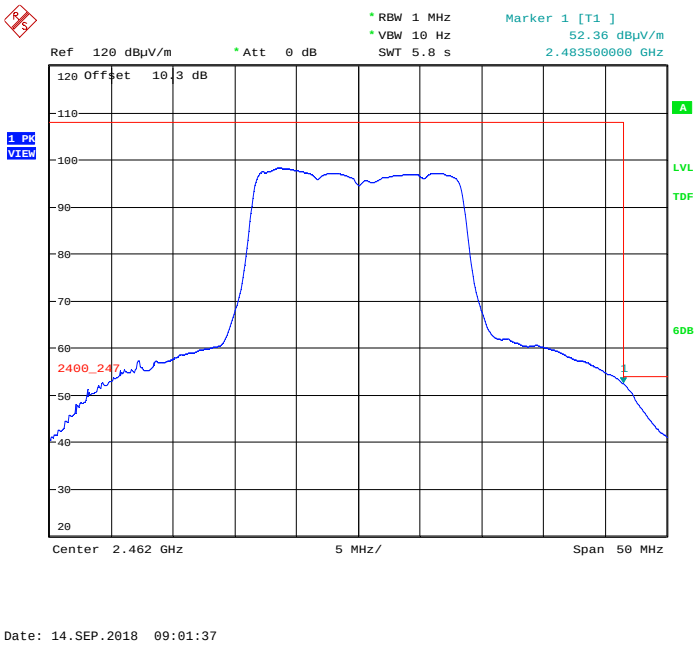
Plot 5.4.4.1.4.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 21, Channel 1, 2412 MHz



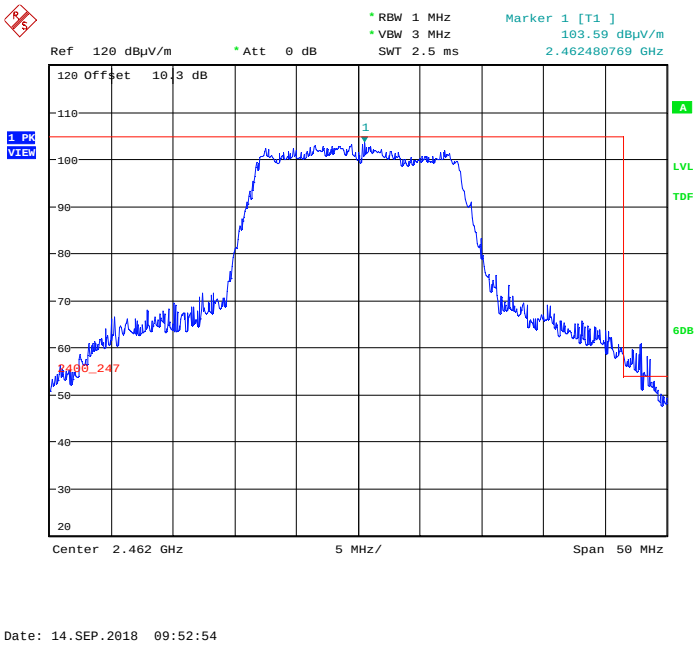
Plot 5.4.4.1.4.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 20, Channel 11, 2462 MHz



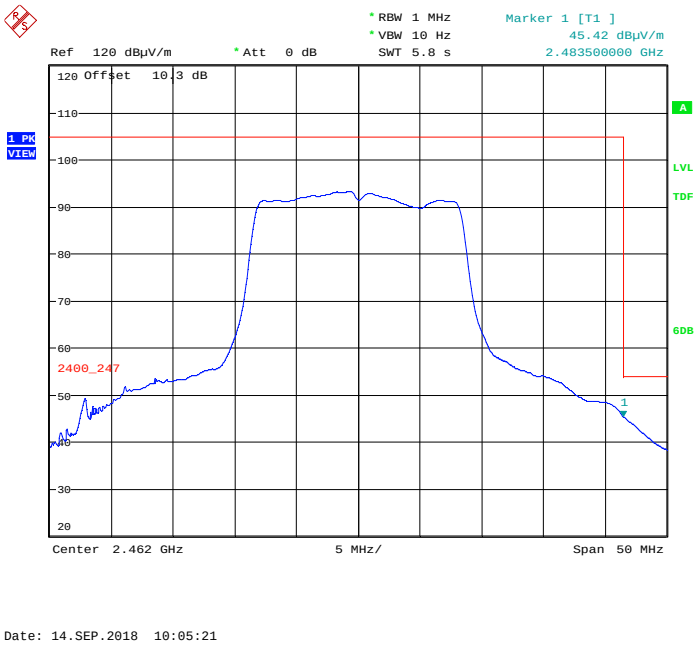
Plot 5.4.4.1.4.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 20, Channel 11, 2462 MHz



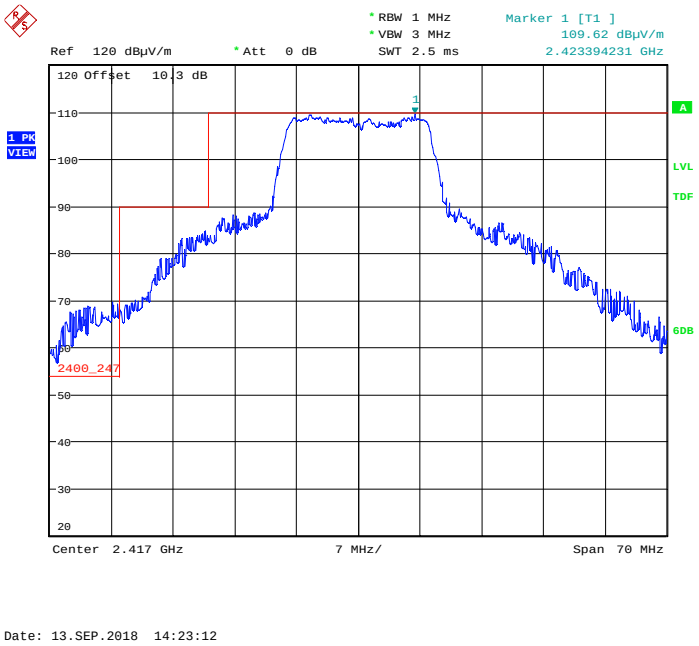
Plot 5.4.4.1.4.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 20, Channel 11, 2462 MHz



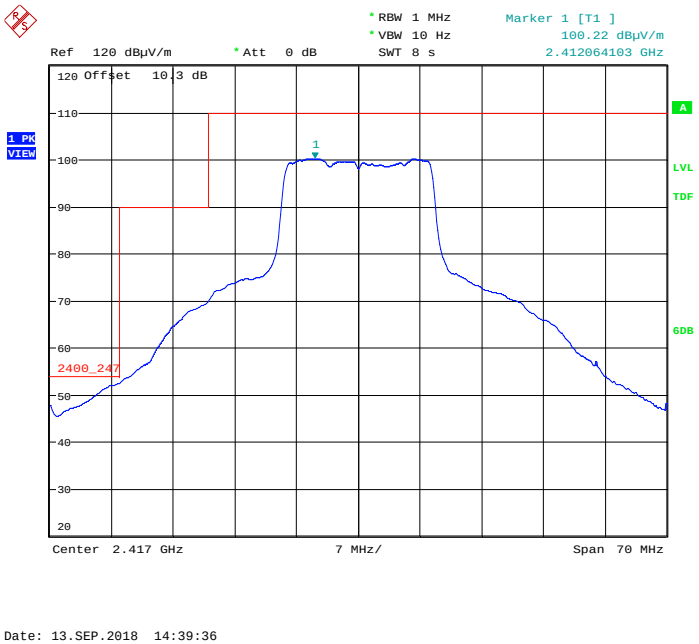
Plot 5.4.4.1.4.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 20, Channel 11, 2462 MHz



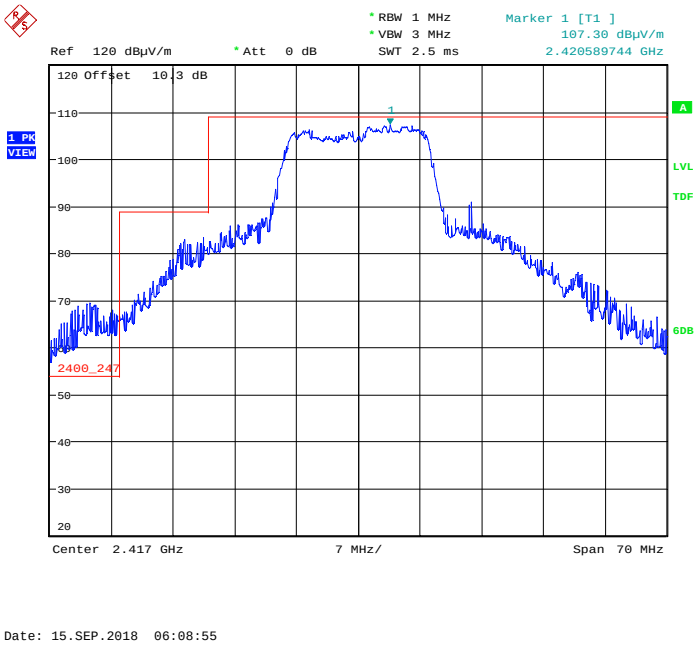
Plot 5.4.4.1.4.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 25, Channel 2, 2417 MHz



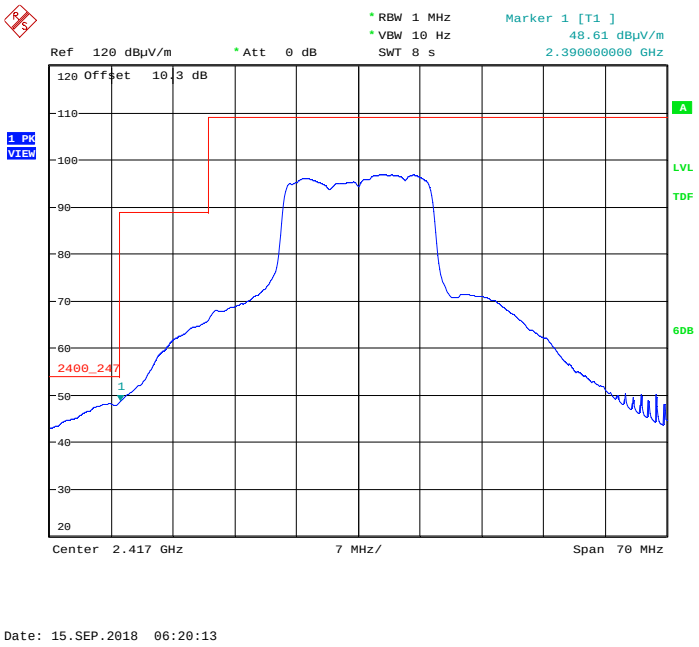
Plot 5.4.4.1.4.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 25, Channel 2, 2417 MHz



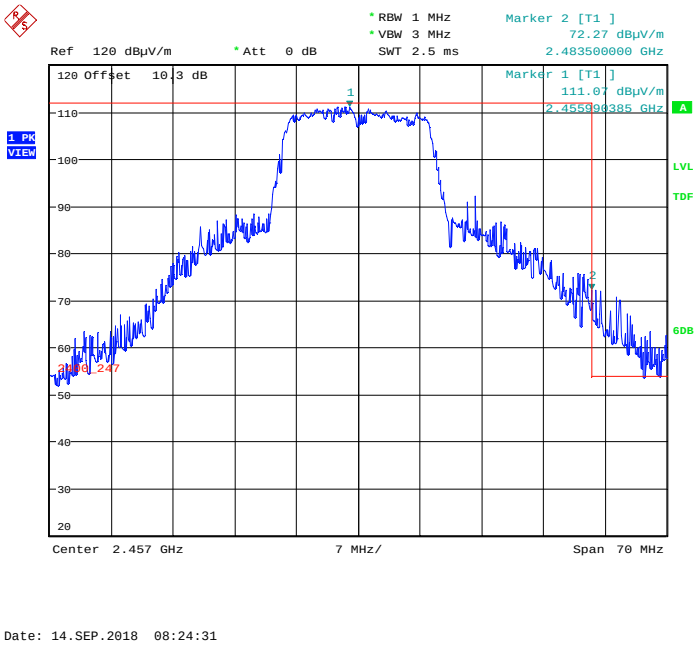
Plot 5.4.4.1.4.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 25, Channel 2, 2417 MHz



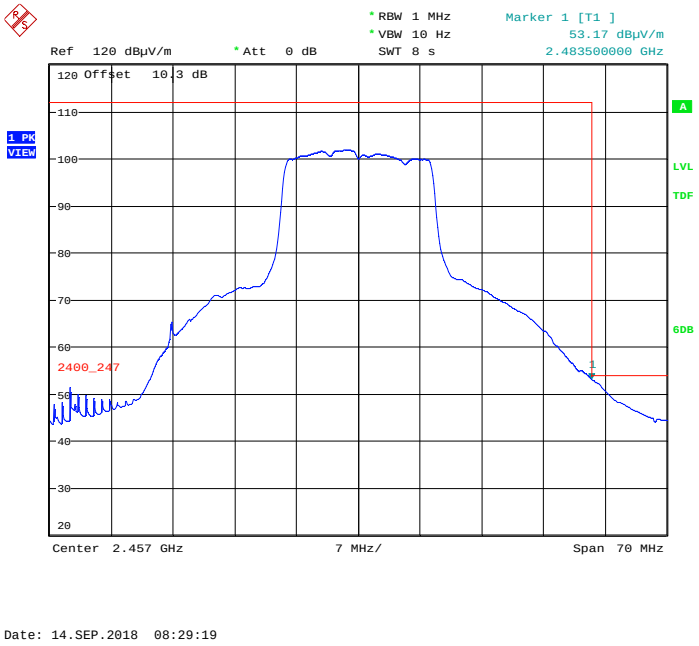
Plot 5.4.4.1.4.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 25, Channel 2, 2417 MHz



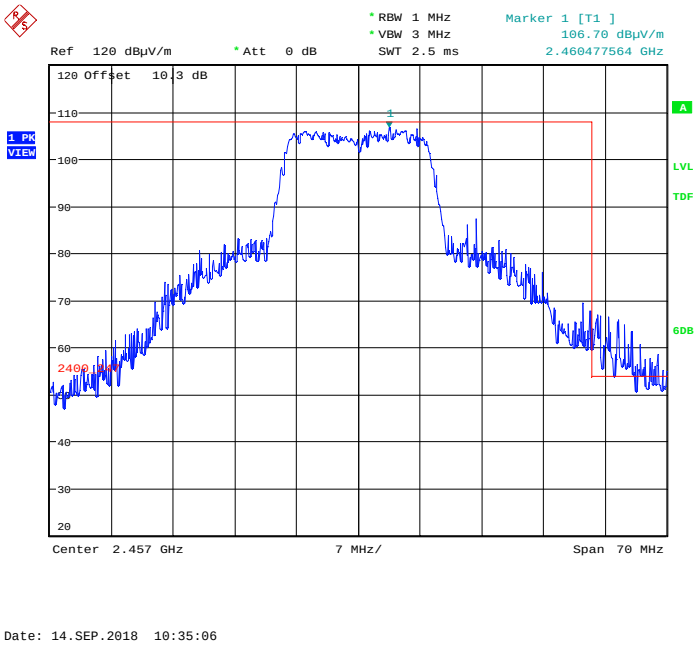
Plot 5.4.4.1.4.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 25, Channel 10, 2457 MHz



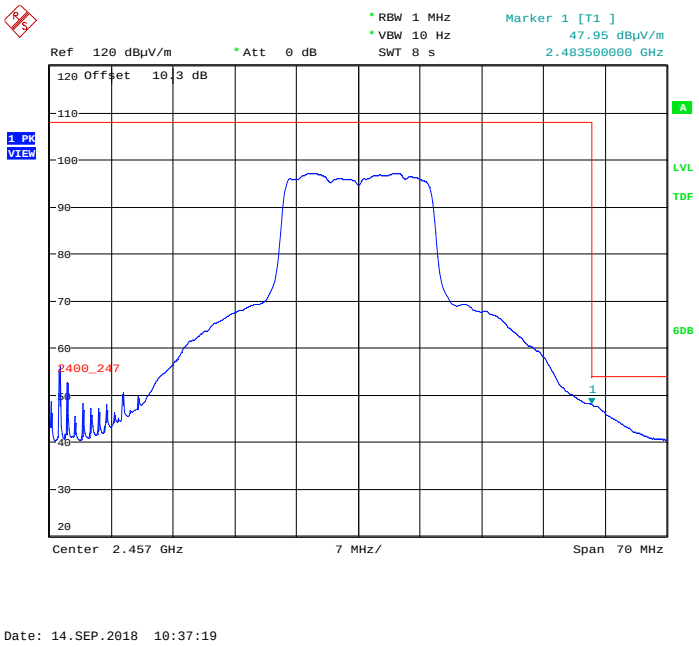
Plot 5.4.4.1.4.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 25, Channel 10, 2457 MHz



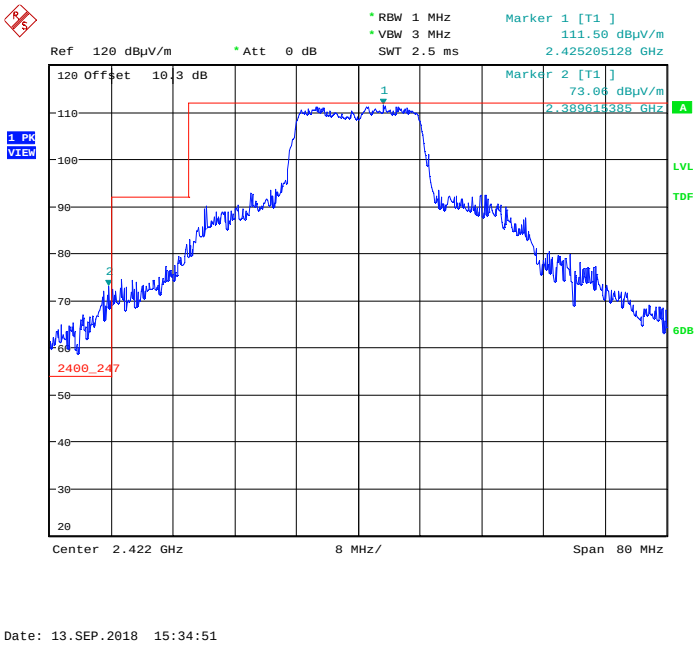
Plot 5.4.4.1.4.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 25, Channel 10, 2457 MHz



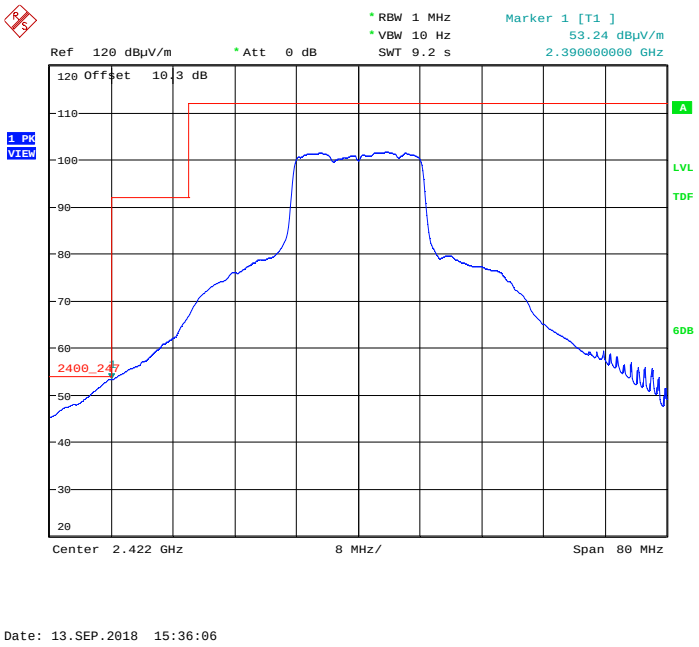
Plot 5.4.4.1.4.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 25, Channel 10, 2457 MHz



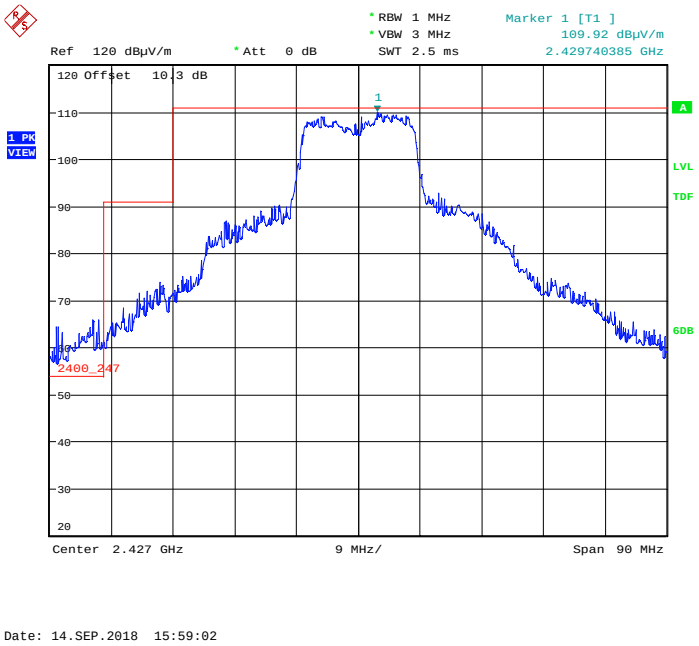
Plot 5.4.4.1.4.17. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 28, Channel 3, 2422 MHz



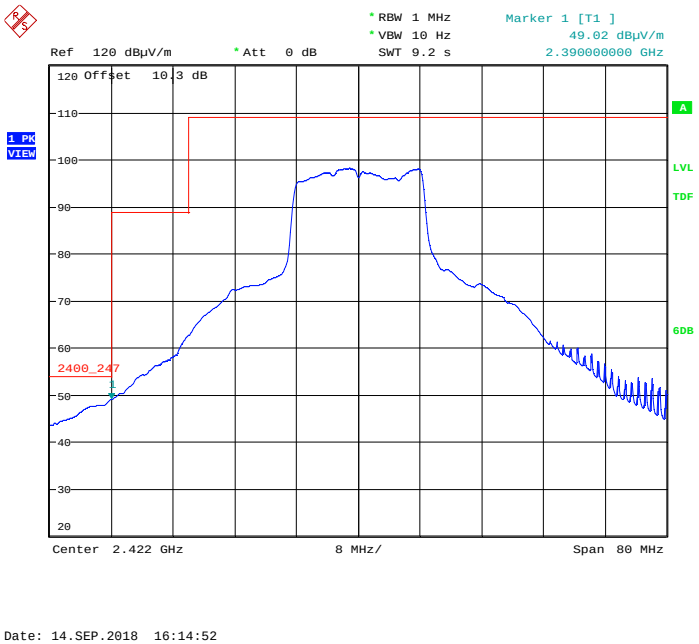
Plot 5.4.4.1.4.18. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 28, Channel 3, 2422 MHz



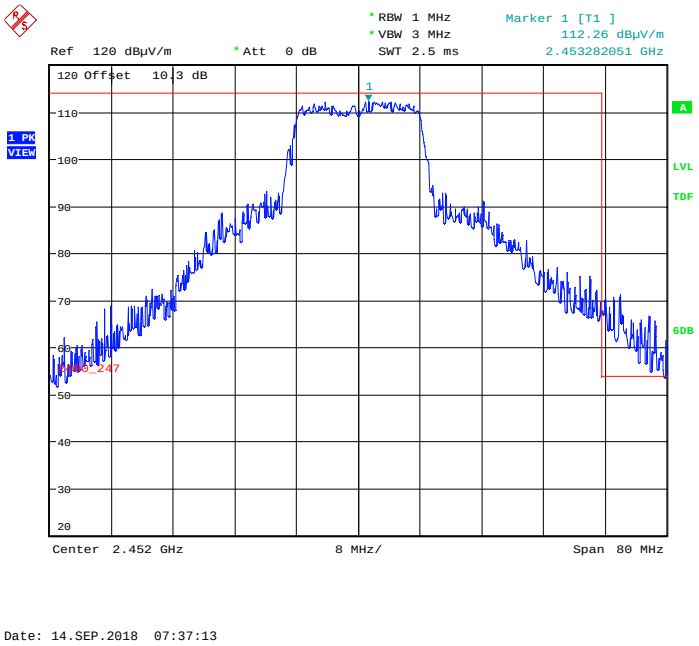
Plot 5.4.4.1.4.19. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 28, Channel 3, 2422 MHz



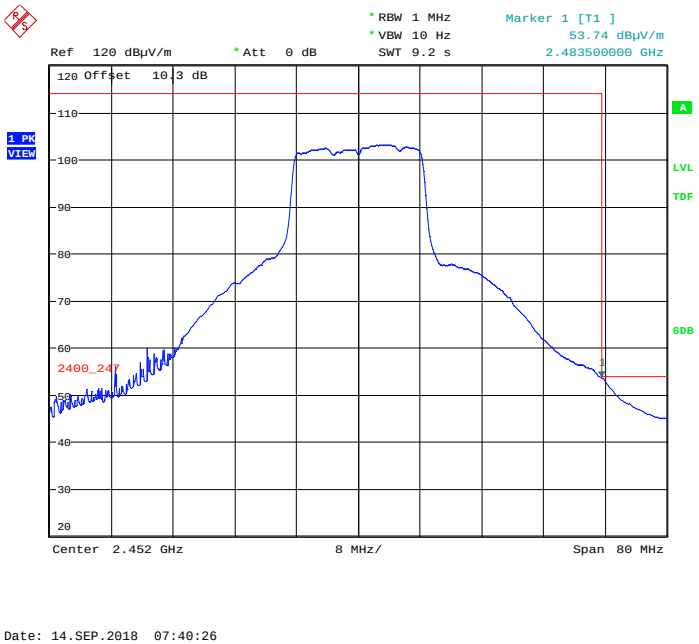
Plot 5.4.4.1.4.20. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 28, Channel 3, 2422 MHz



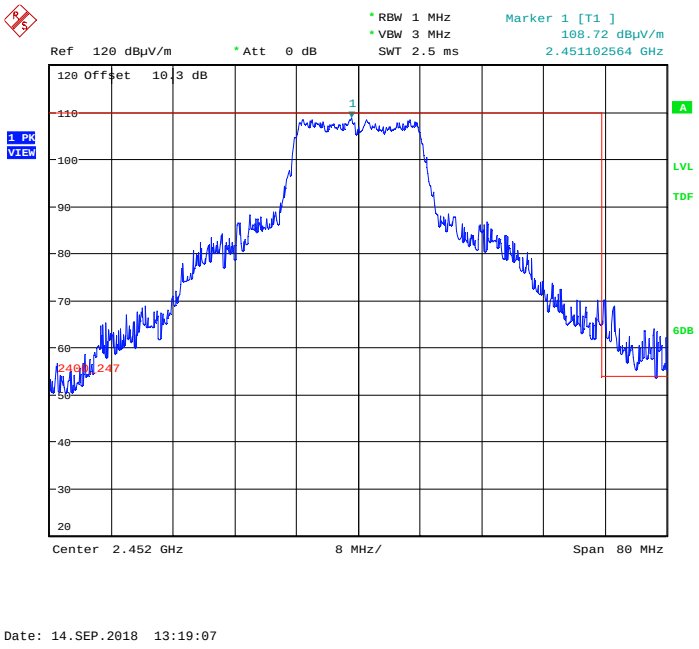
Plot 5.4.4.1.4.21. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 27, Channel 9, 2452 MHz



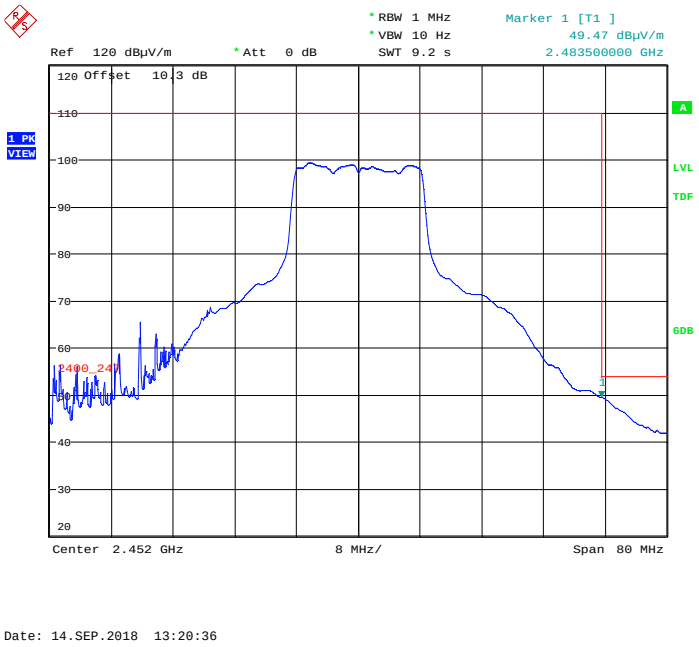
Plot 5.4.4.1.4.22. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 27, Channel 9, 2452 MHz



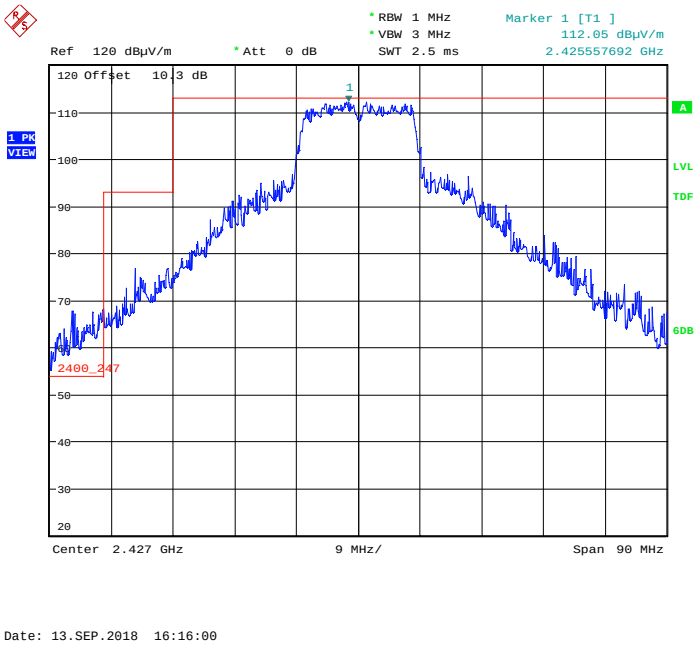
Plot 5.4.4.1.4.23. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 27, Channel 9, 2452 MHz



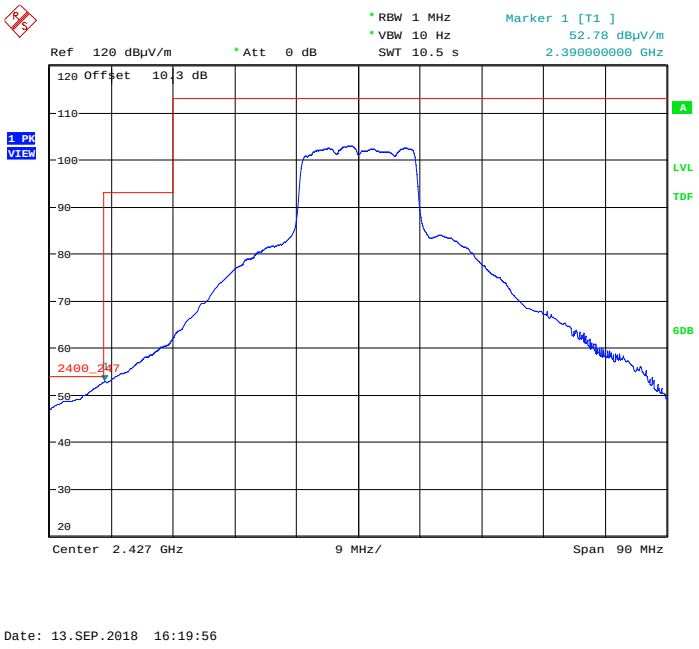
Plot 5.4.4.1.4.24. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 27, Channel 9, 2452 MHz



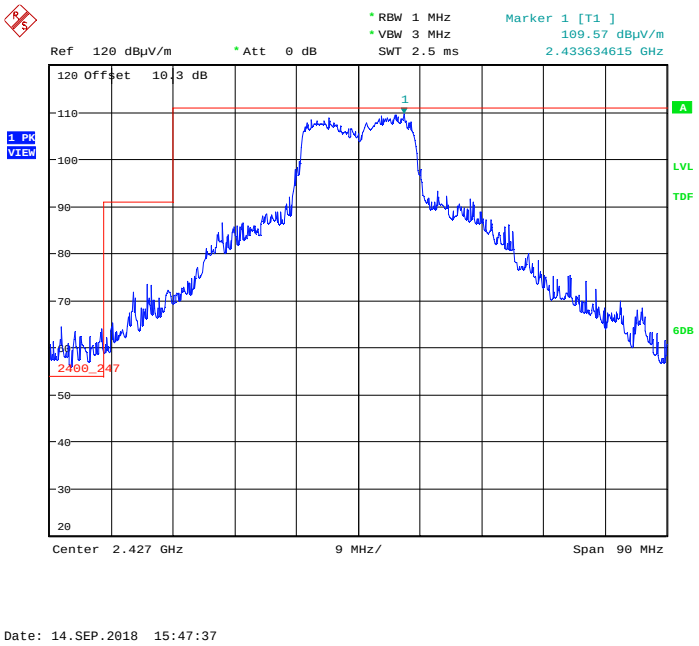
Plot 5.4.4.1.4.25. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 30, Channel 4, 2427 MHz



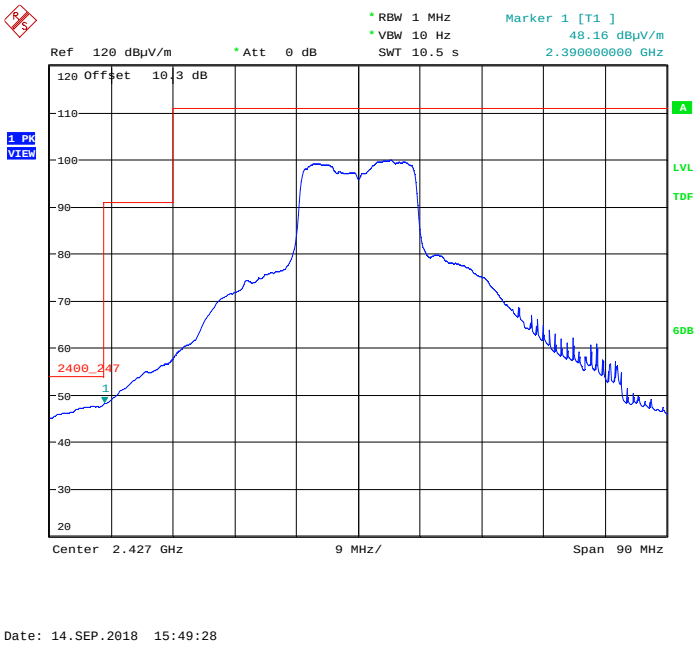
Plot 5.4.4.1.4.26. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 30, Channel 4, 2427 MHz



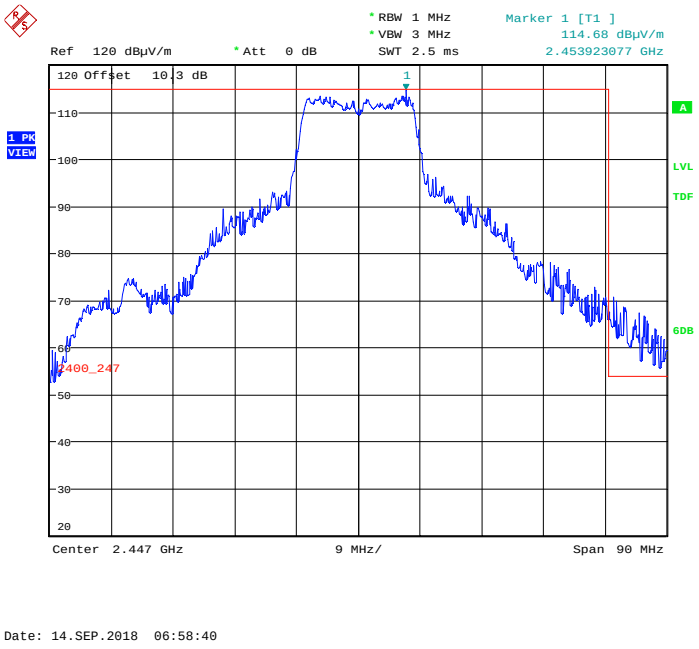
Plot 5.4.4.1.4.27. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 30, Channel 4, 2427 MHz



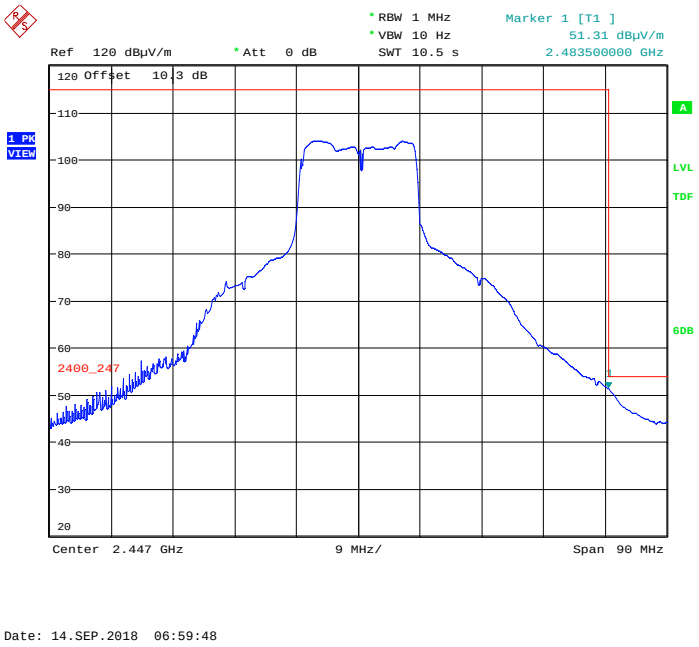
Plot 5.4.4.1.4.28. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 30, Channel 4, 2427 MHz



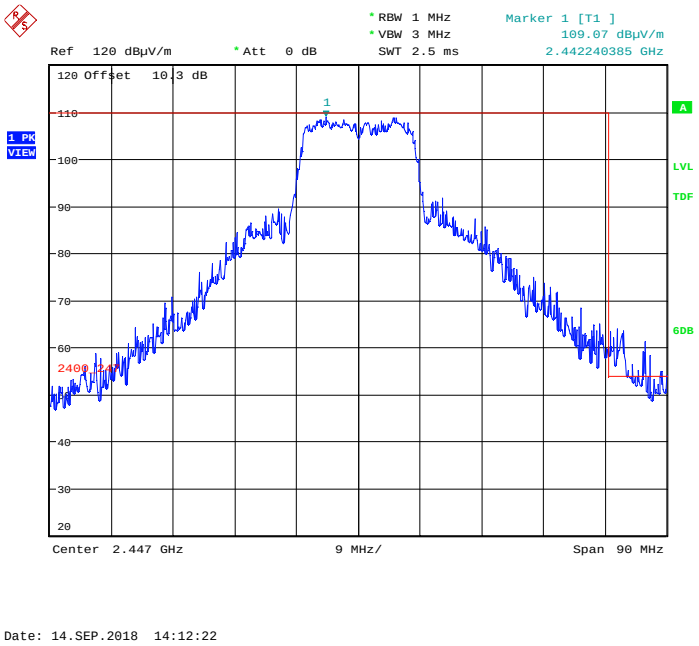
Plot 5.4.4.1.4.29. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 28, Channel 8, 2447 MHz



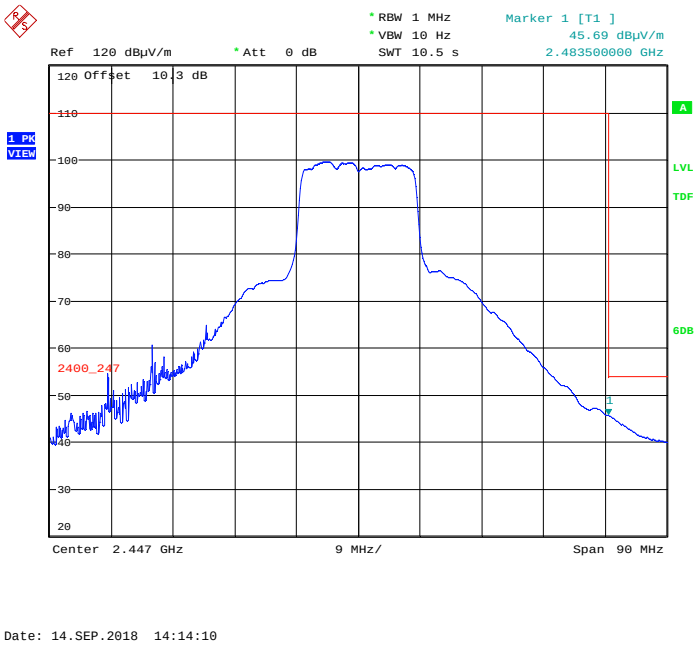
Plot 5.4.4.1.4.30. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 28, Channel 8, 2447 MHz



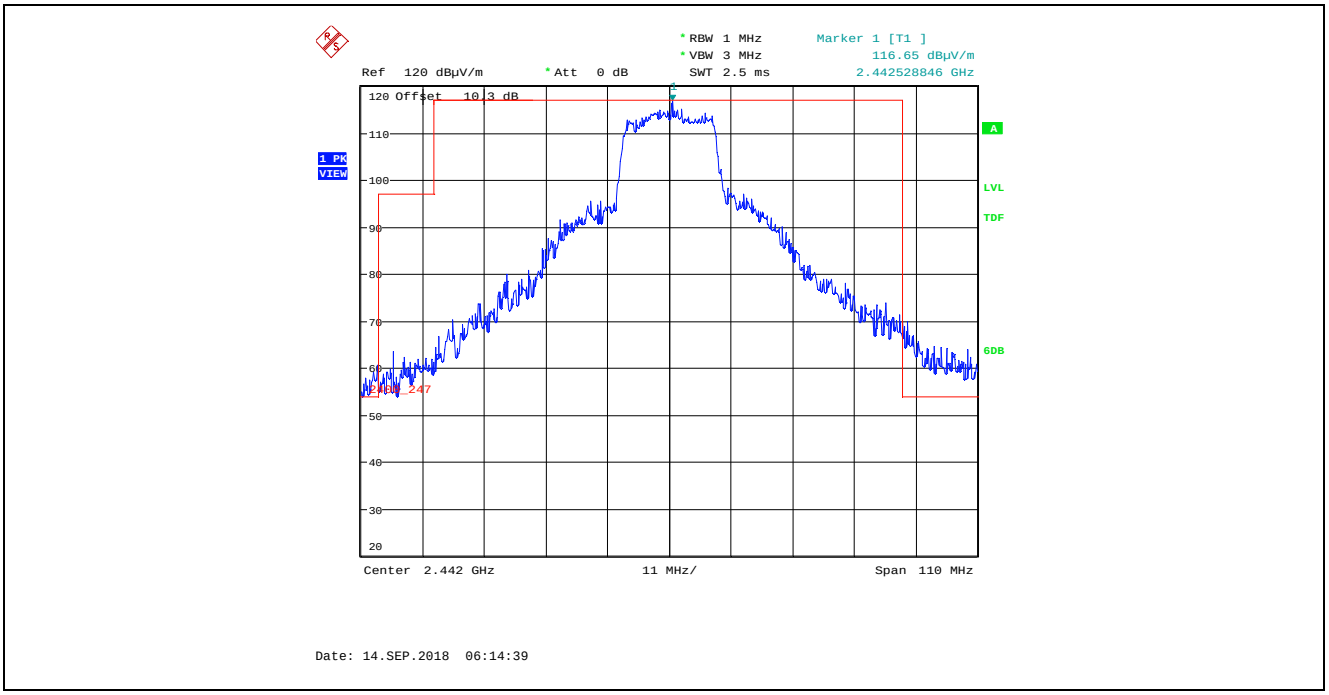
Plot 5.4.4.1.4.31. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 28, Channel 8, 2447 MHz



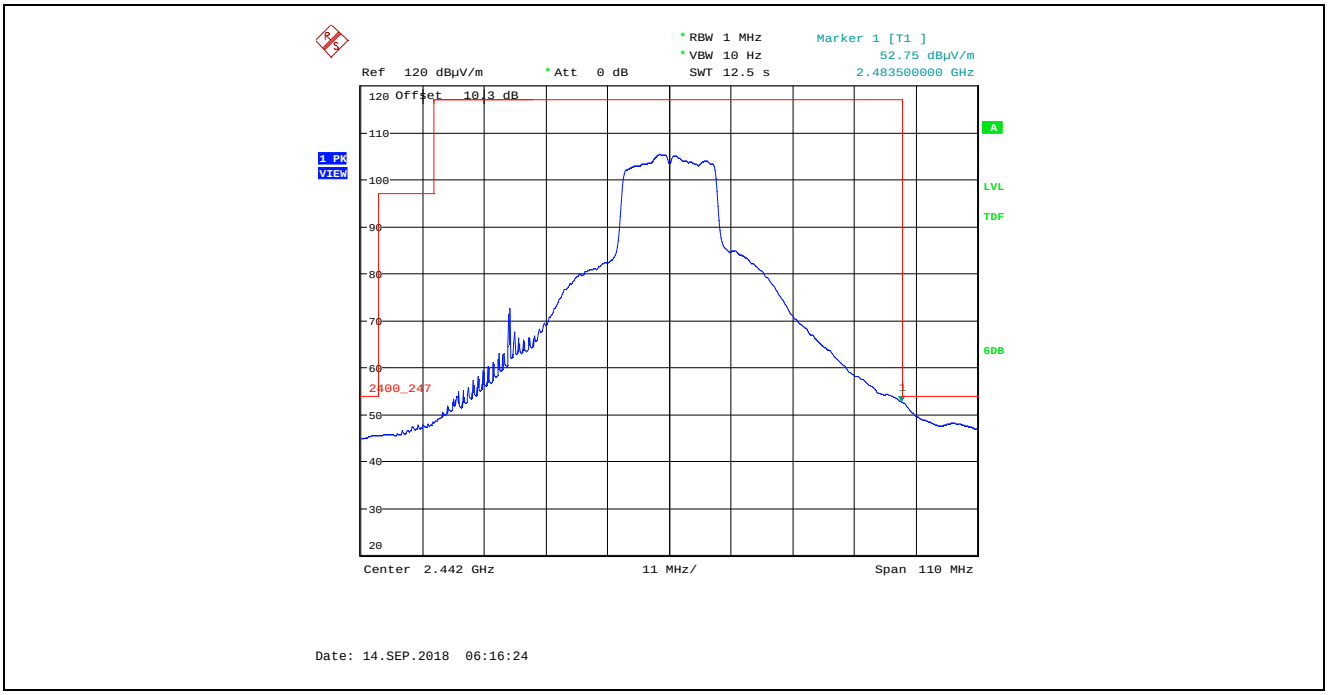
Plot 5.4.4.1.4.32. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 28, Channel 8, 2447 MHz



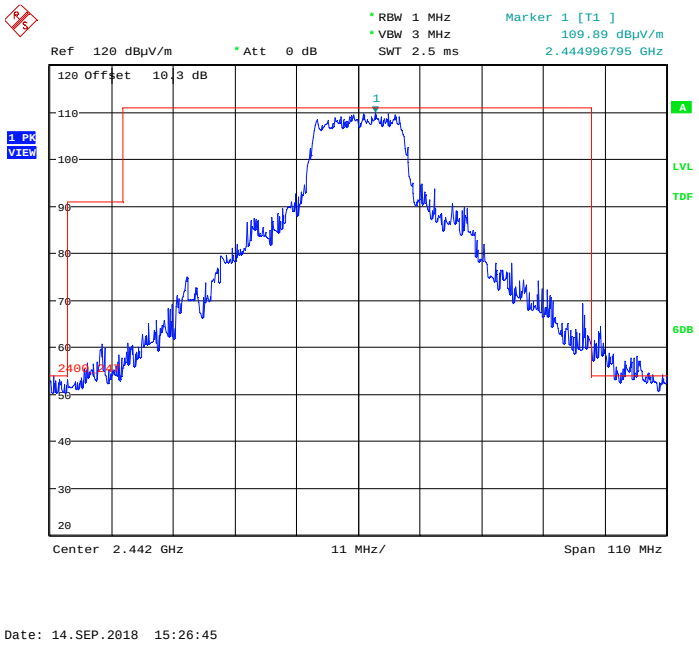
Plot 5.4.4.1.4.33. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
9 Mbps BPSK, Power Setting 30, Channel 7, 2442 MHz



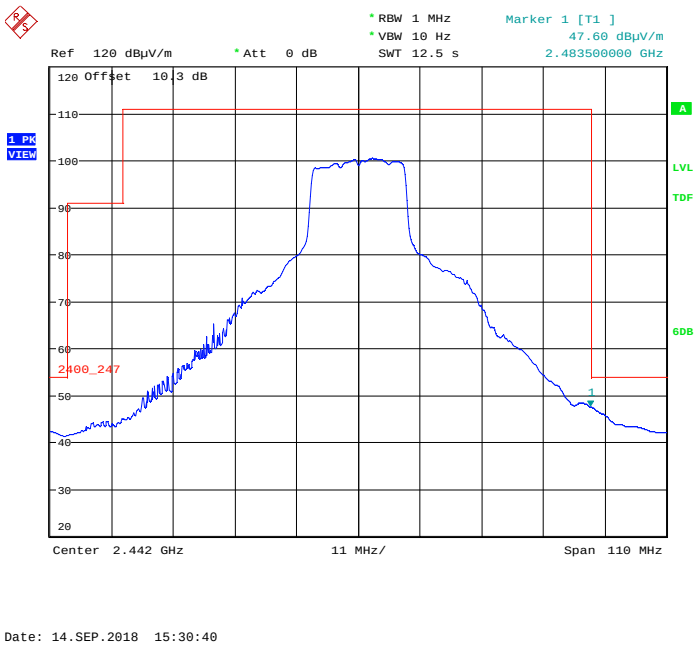
Plot 5.4.4.1.4.34. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
9 Mbps BPSK, Power Setting 30, Channel 7, 2442 MHz



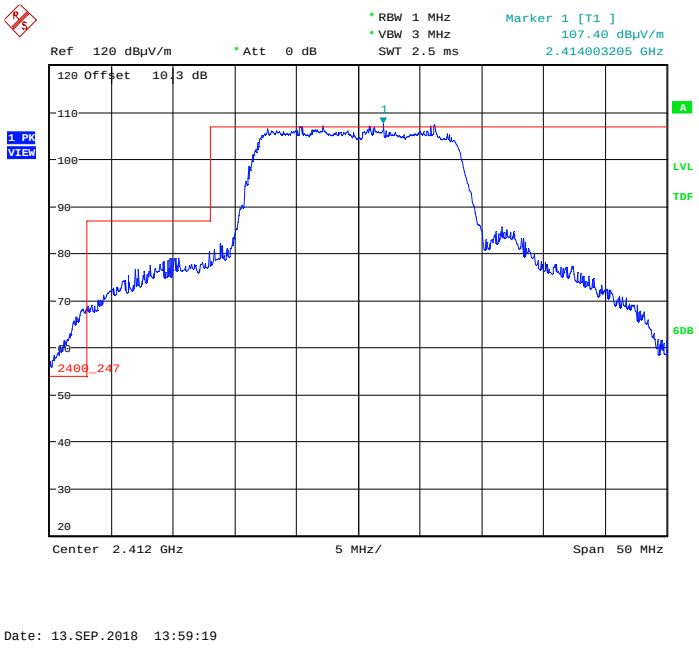
Plot 5.4.4.1.4.35. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
9 Mbps BPSK, Power Setting 30, Channel 7, 2442 MHz



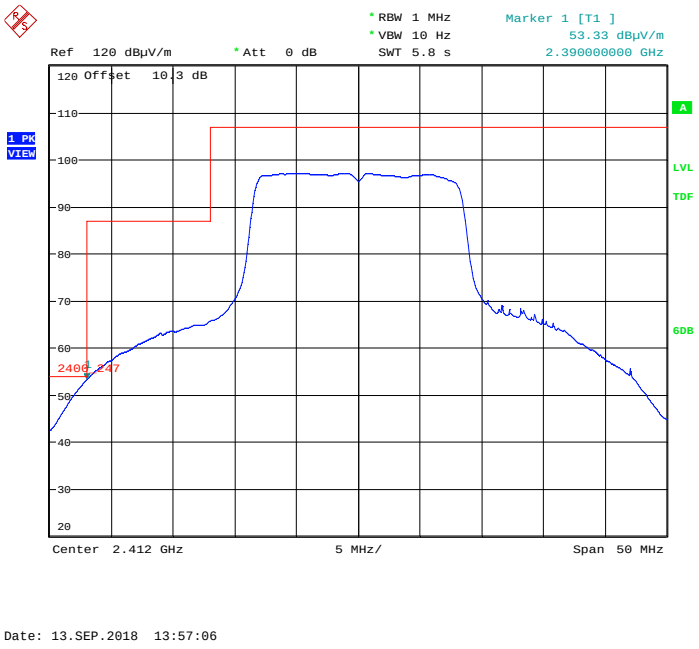
Plot 5.4.4.1.4.36. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
9 Mbps BPSK, Power Setting 30, Channel 7, 2442 MHz



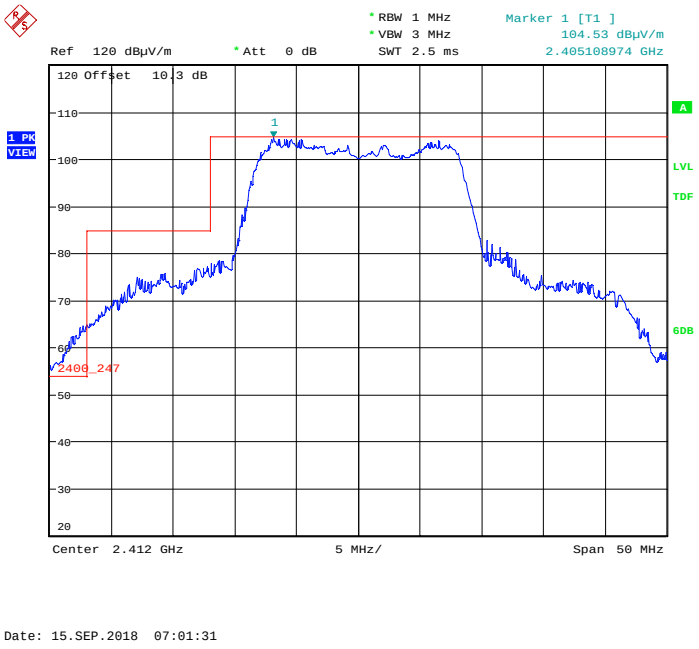
Plot 5.4.4.1.4.37. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 21, Channel 1, 2412 MHz



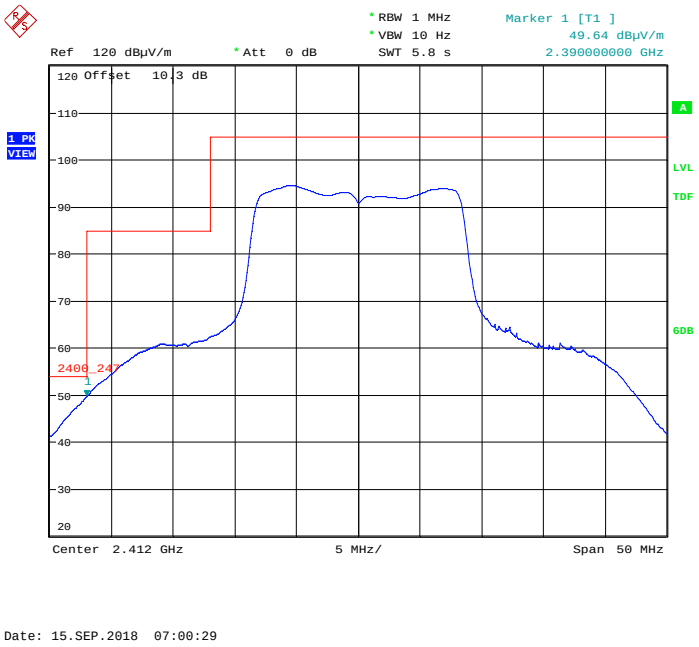
Plot 5.4.4.1.4.38. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 21, Channel 1, 2412 MHz



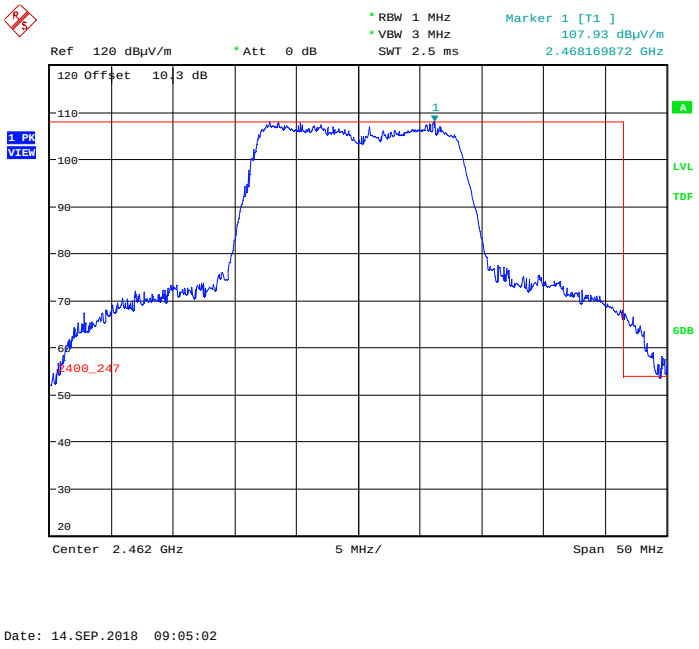
Plot 5.4.4.1.4.39. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 21, Channel 1, 2412 MHz



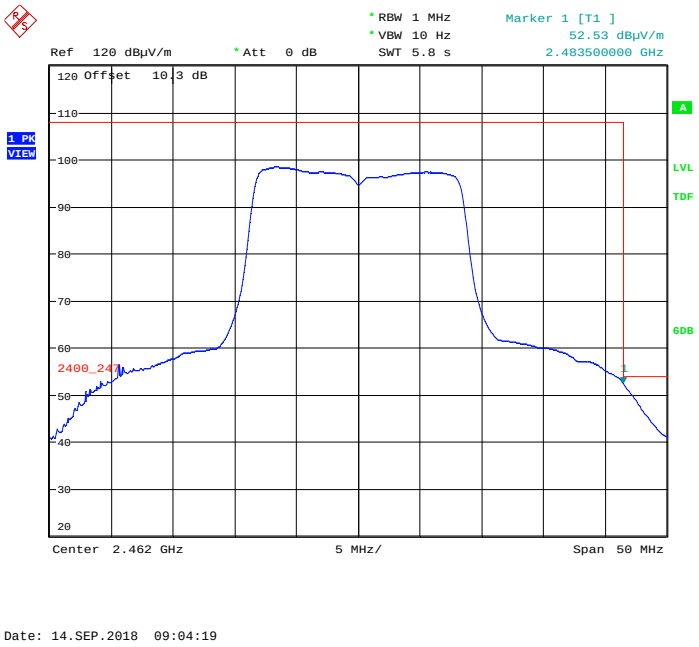
Plot 5.4.4.1.4.40. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 21, Channel 1, 2412 MHz



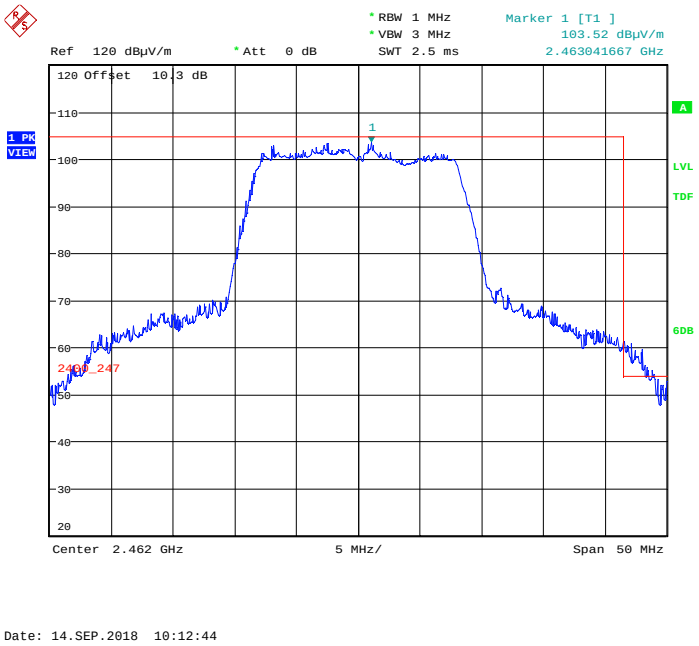
Plot 5.4.4.1.4.41. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 20, Channel 11, 2462 MHz



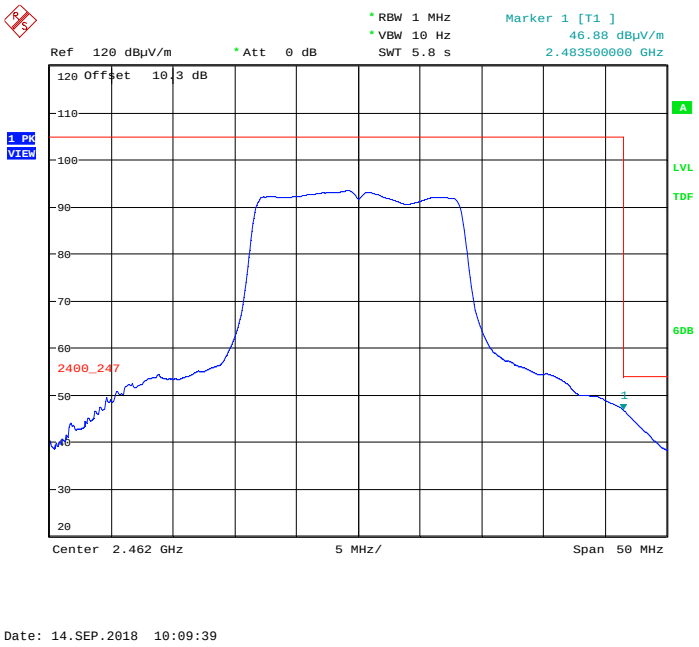
Plot 5.4.4.1.4.42. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 20, Channel 11, 2462 MHz



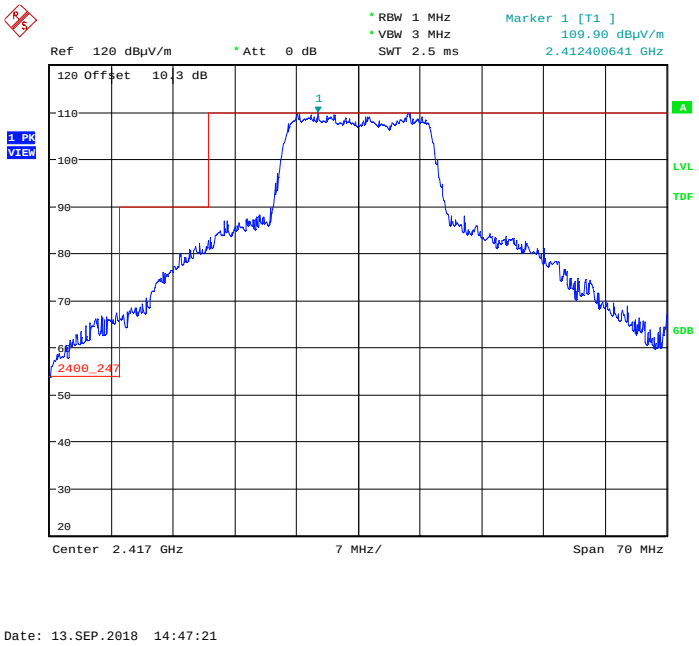
Plot 5.4.4.1.4.43. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 20, Channel 11, 2462 MHz



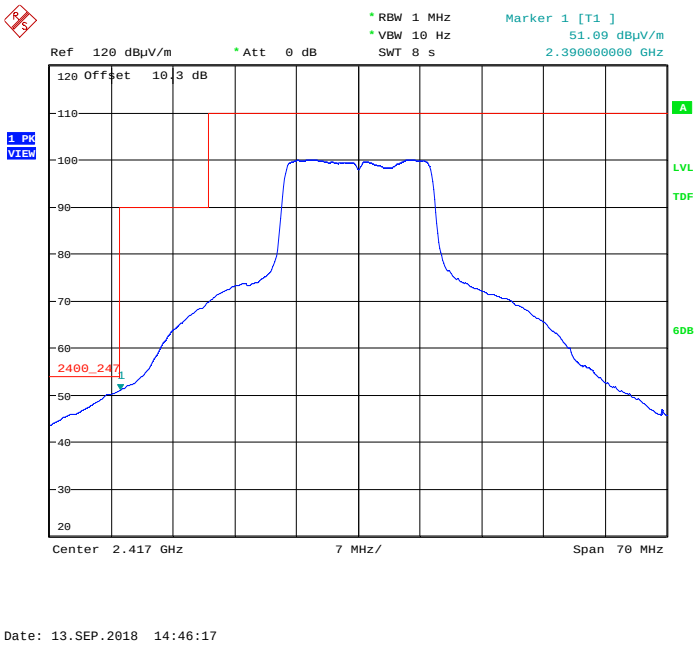
Plot 5.4.4.1.4.44. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 20, Channel 11, 2462 MHz



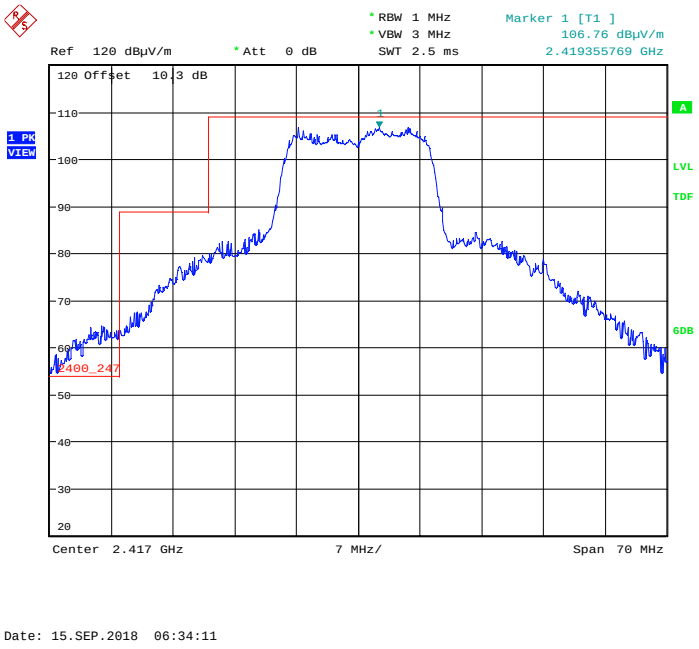
Plot 5.4.4.1.4.45. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 25, Channel 2, 2417 MHz



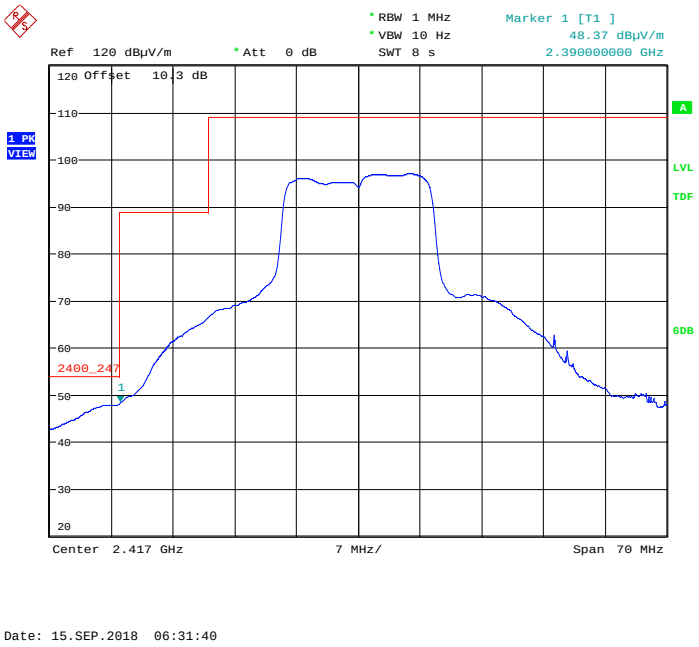
Plot 5.4.4.1.4.46. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 25, Channel 2, 2417 MHz



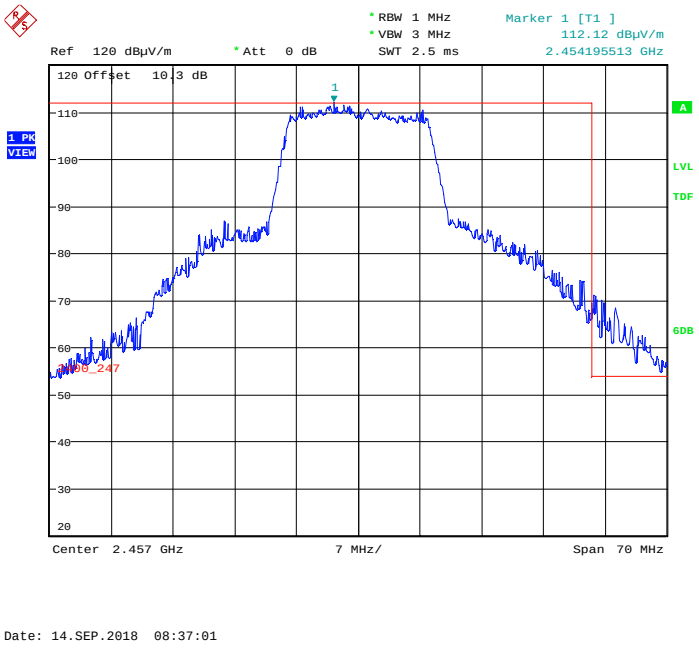
Plot 5.4.4.1.4.47. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 25, Channel 2, 2417 MHz



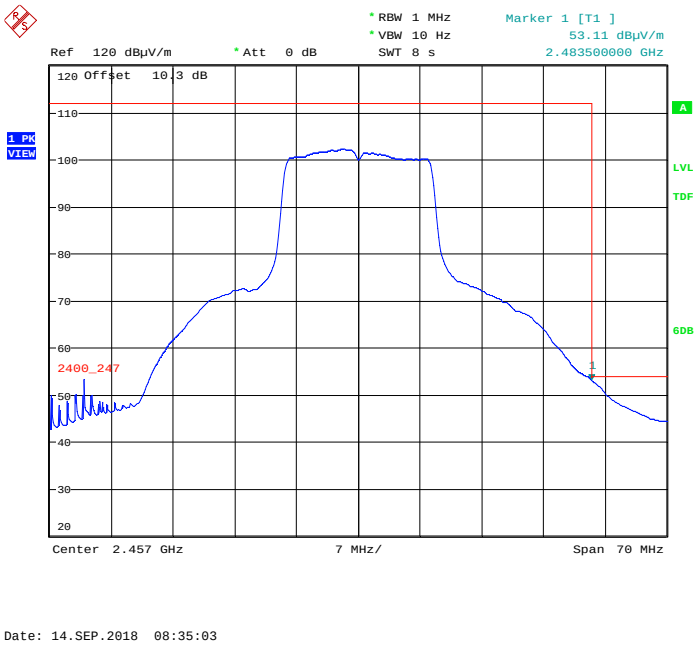
Plot 5.4.4.1.4.48. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 25, Channel 2, 2417 MHz



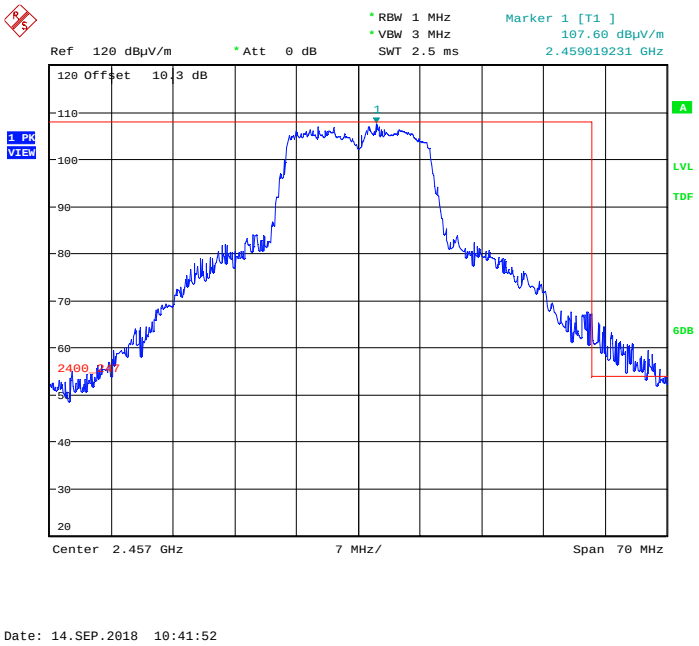
Plot 5.4.4.1.4.49. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 25, Channel 10, 2457 MHz



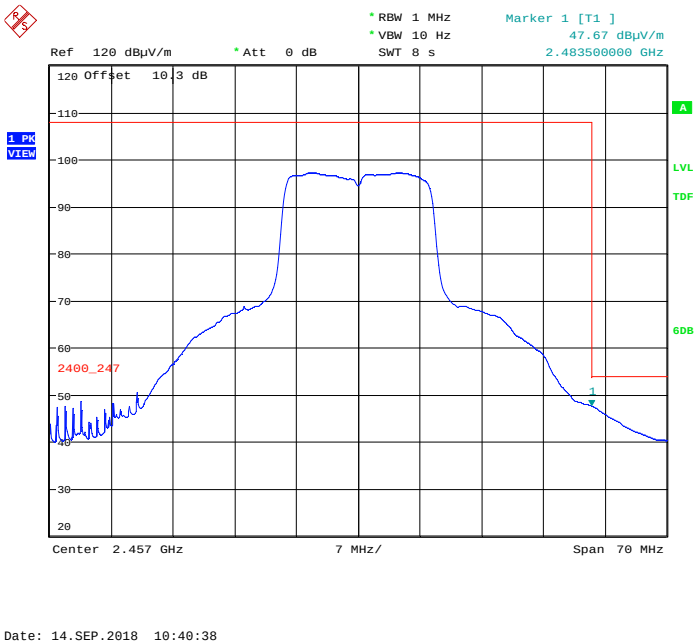
Plot 5.4.4.1.4.50. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 25, Channel 10, 2457 MHz



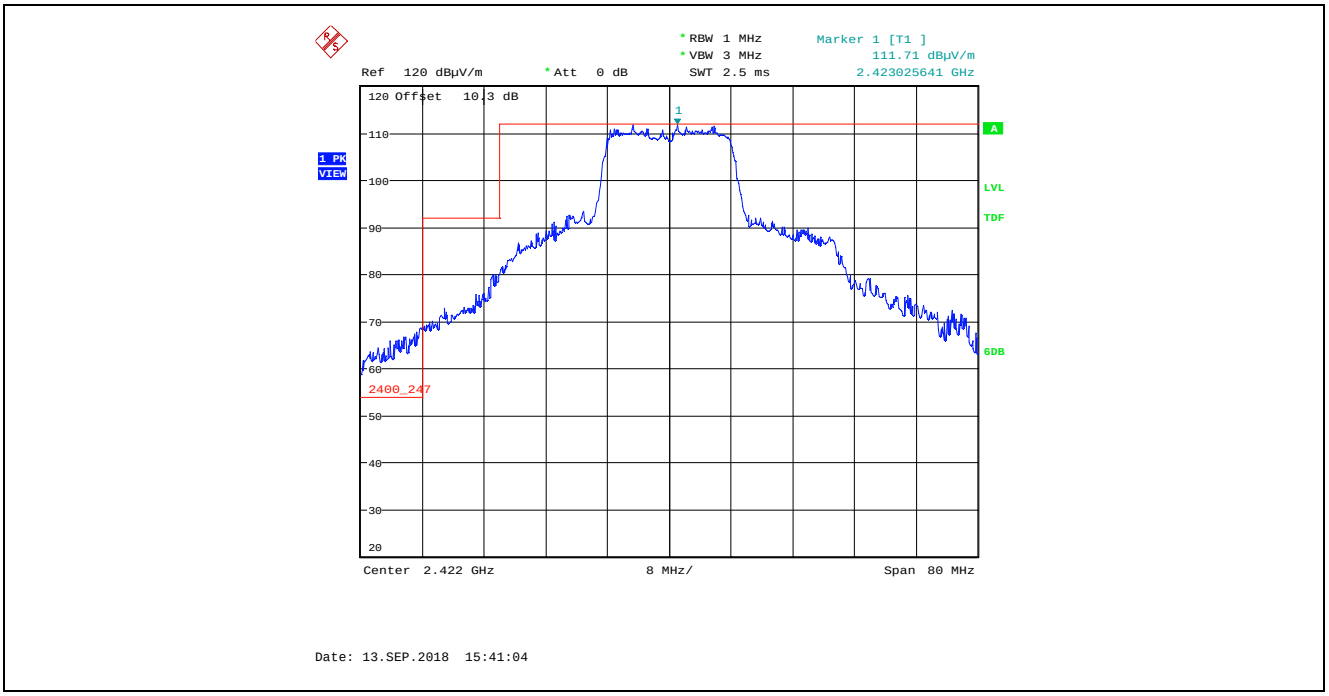
Plot 5.4.4.1.4.51. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 25, Channel 10, 2457 MHz



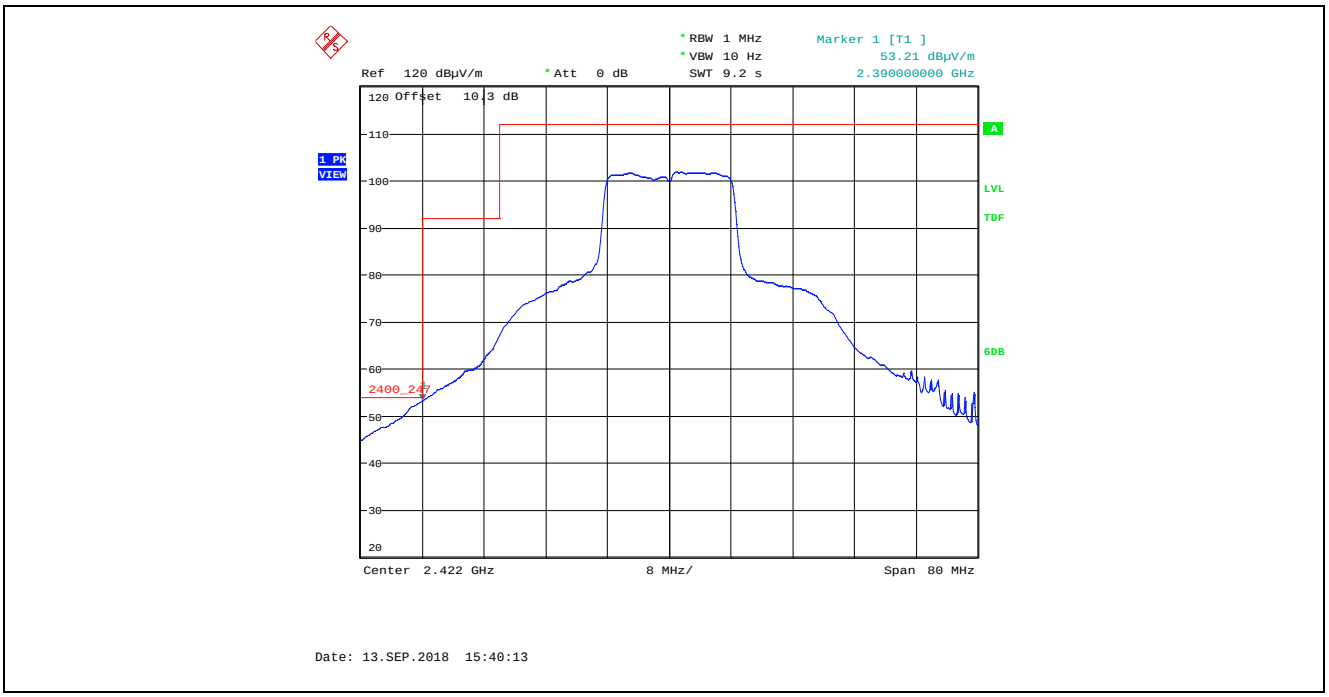
Plot 5.4.4.1.4.52. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 25, Channel 10, 2457 MHz



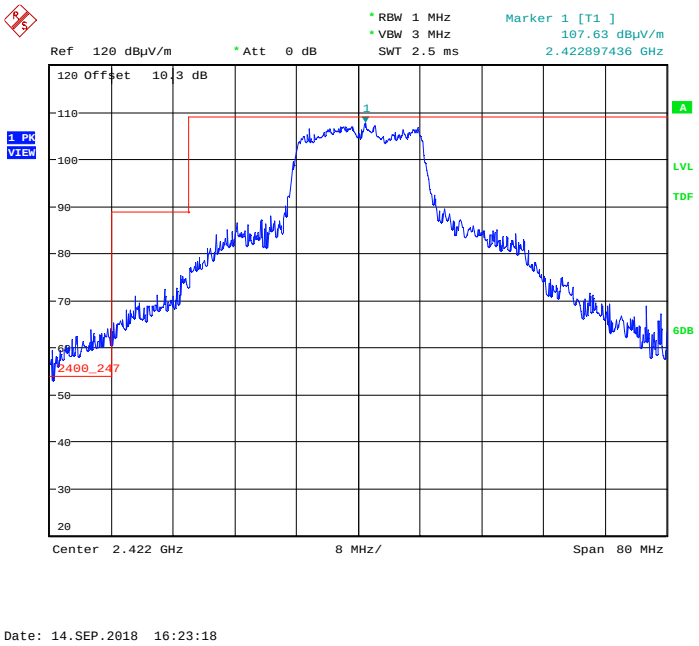
Plot 5.4.4.1.4.53. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 28, Channel 3, 2422 MHz



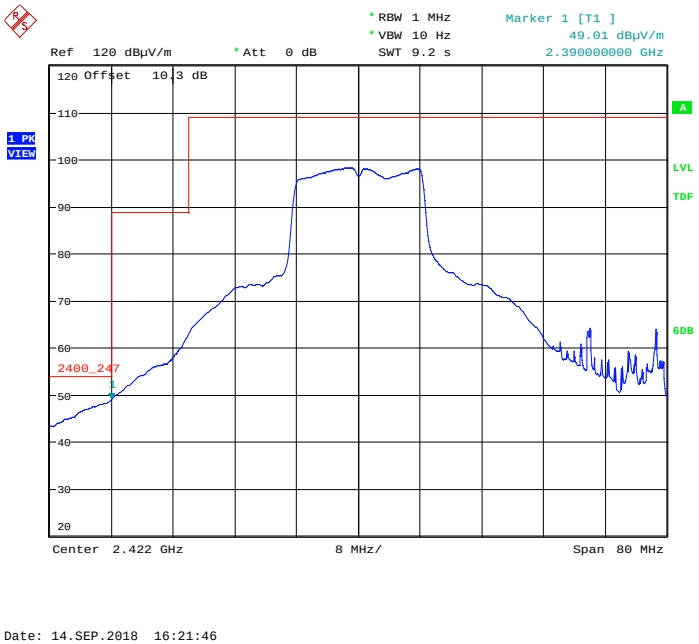
Plot 5.4.4.1.4.54. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 28, Channel 3, 2422 MHz



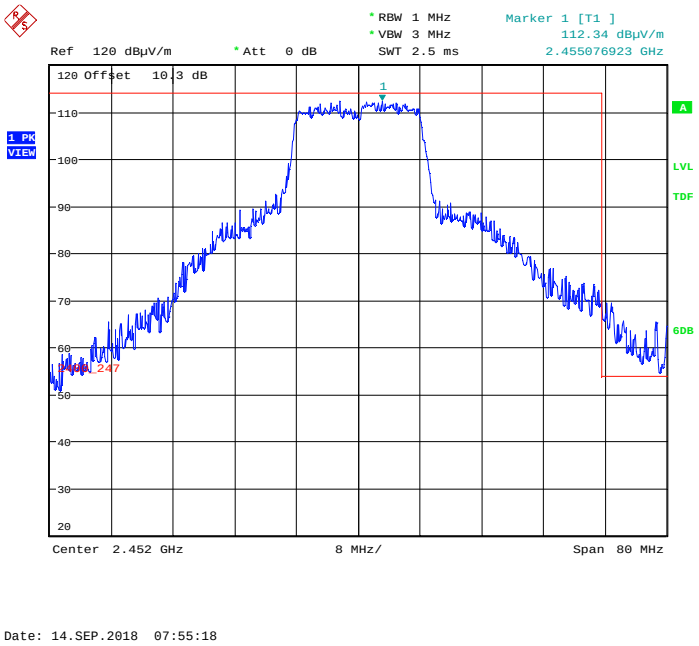
Plot 5.4.4.1.4.55. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 28, Channel 3, 2422 MHz



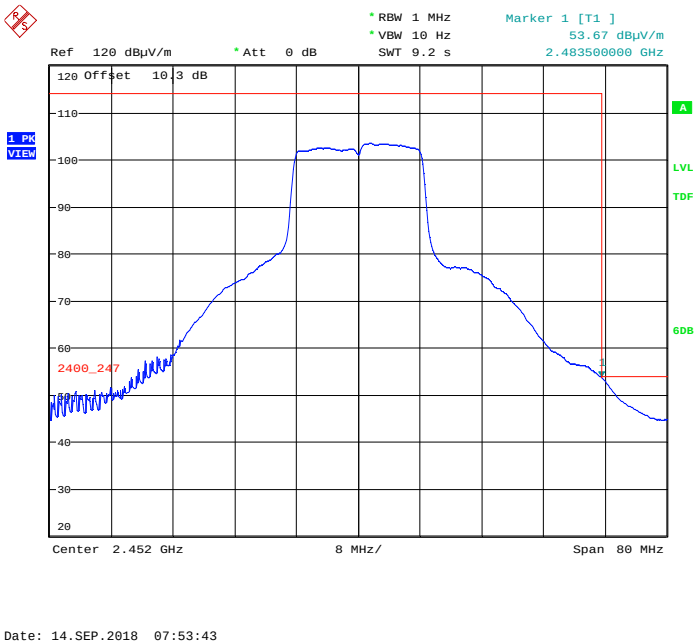
Plot 5.4.4.1.4.56. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 28, Channel 3, 2422 MHz



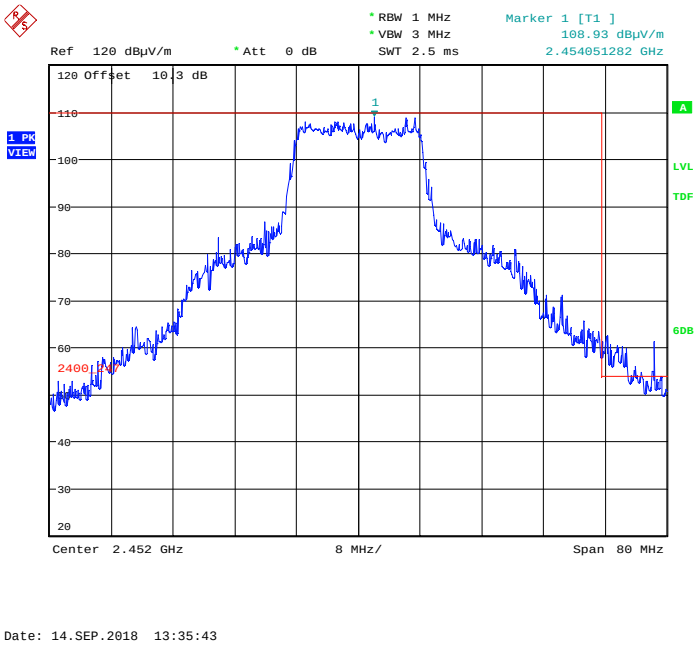
Plot 5.4.4.1.4.57. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 27, Channel 9, 2452 MHz



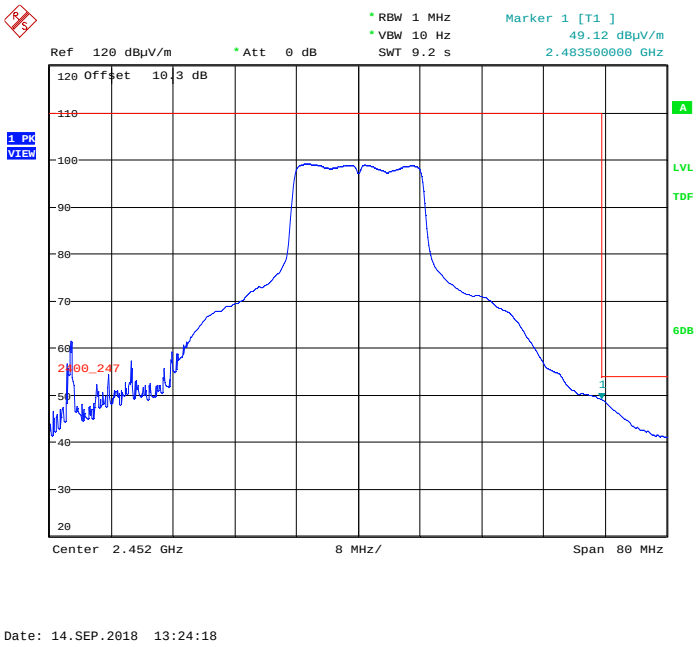
Plot 5.4.4.1.4.58. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 27, Channel 9, 2452 MHz



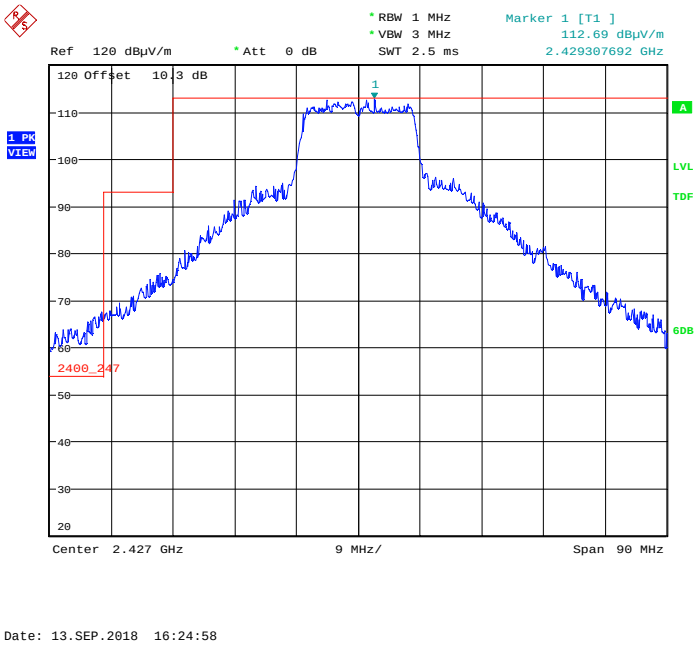
Plot 5.4.4.1.4.59. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 27, Channel 9, 2452 MHz



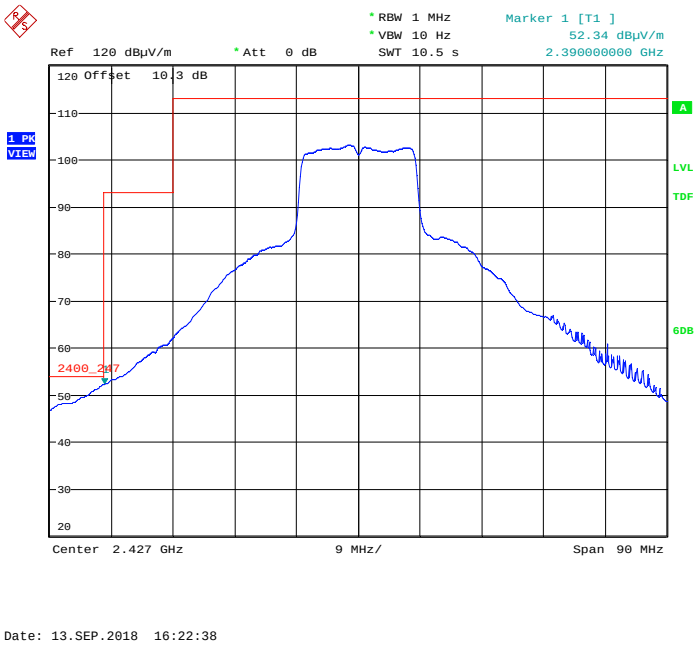
Plot 5.4.4.1.4.60. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 27, Channel 9, 2452 MHz



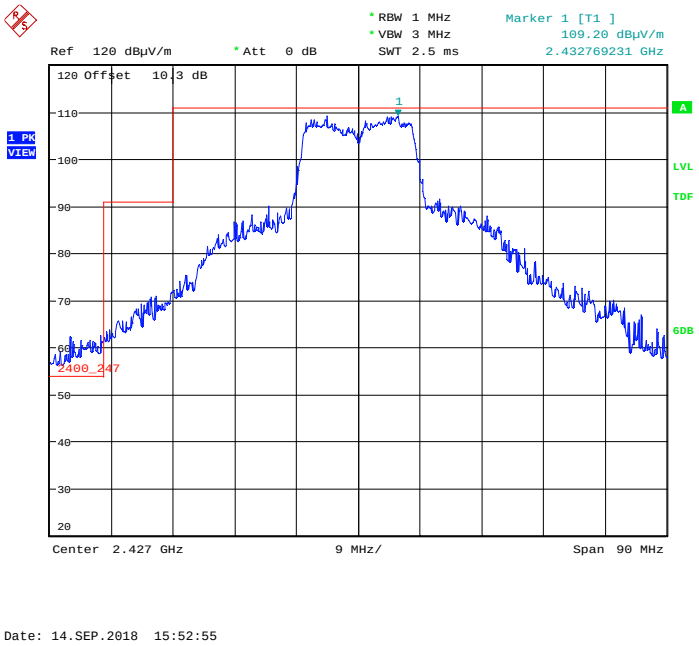
Plot 5.4.4.1.4.61. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 30, Channel 4, 2427 MHz



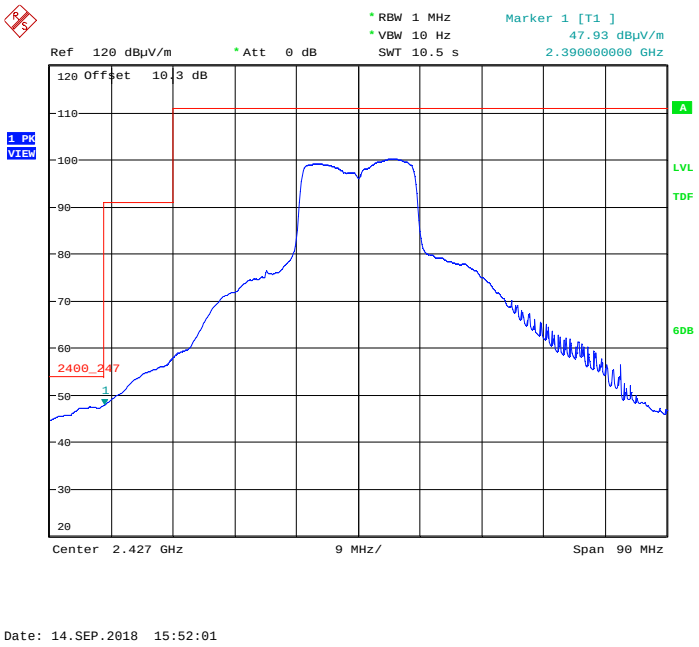
Plot 5.4.4.1.4.62. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 30, Channel 4, 2427 MHz



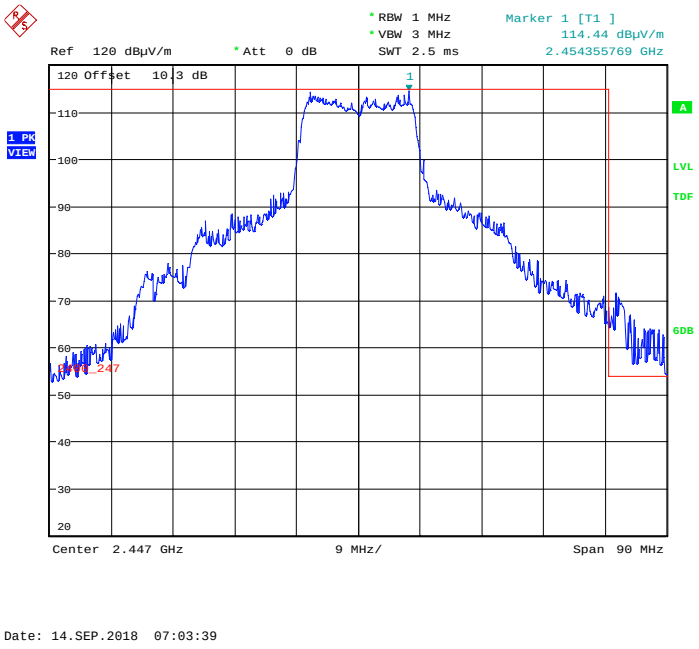
Plot 5.4.4.1.4.63. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 30, Channel 4, 2427 MHz



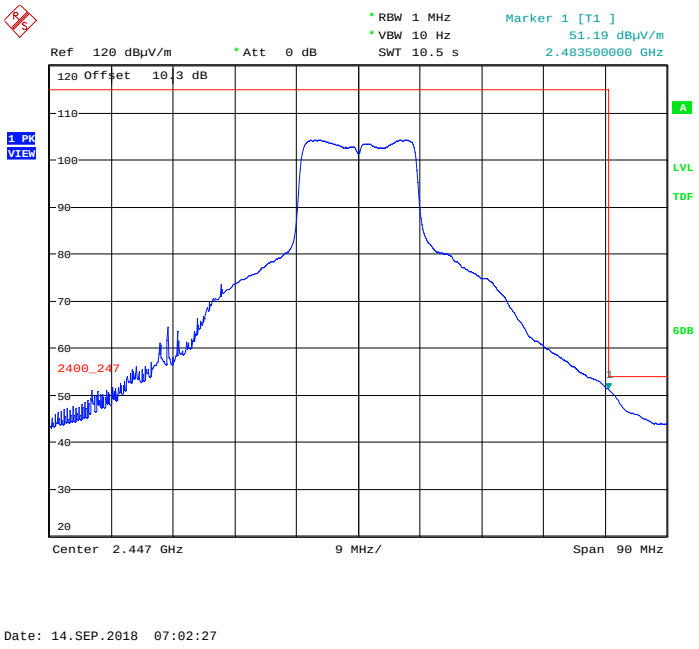
Plot 5.4.4.1.4.64. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 30, Channel 4, 2427 MHz



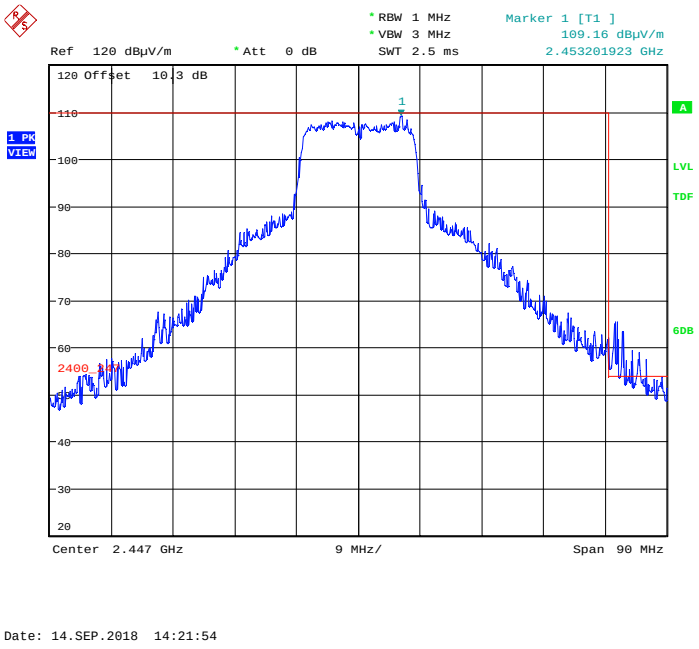
Plot 5.4.4.1.4.65. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 28, Channel 8, 2447 MHz



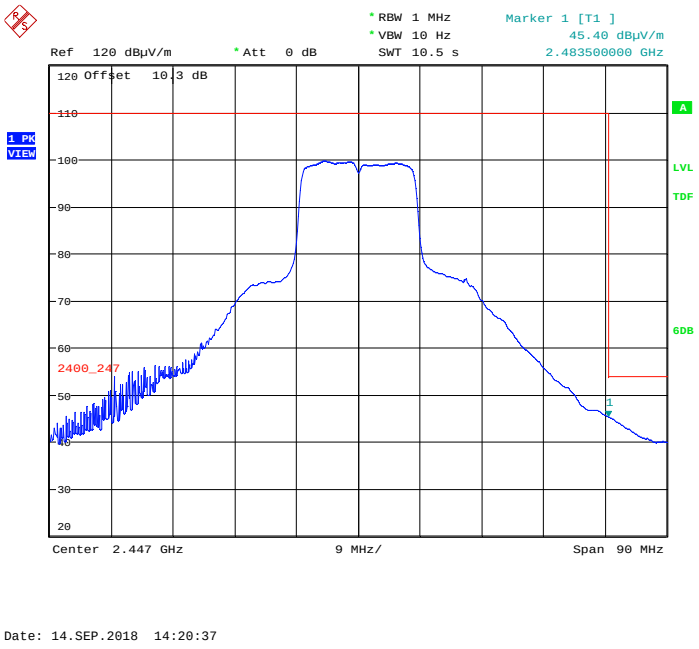
Plot 5.4.4.1.4.66. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 28, Channel 8, 2447 MHz



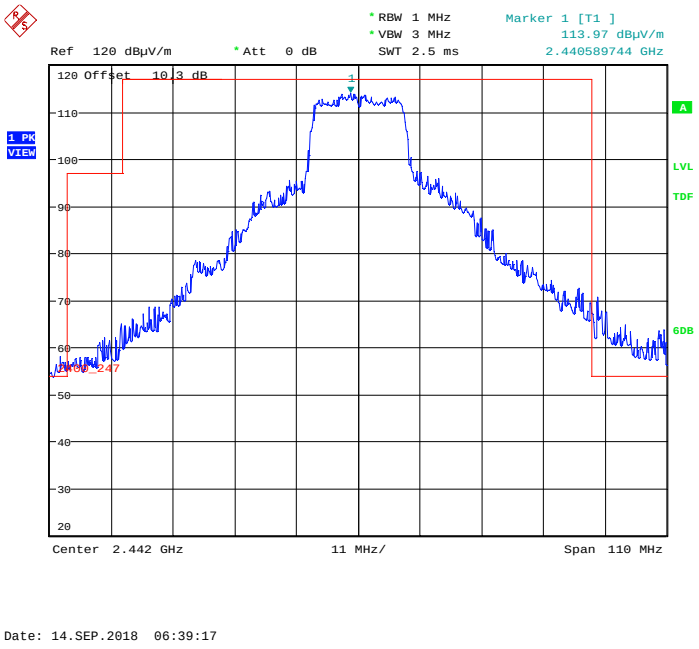
Plot 5.4.4.1.4.67. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 28, Channel 8, 2447 MHz



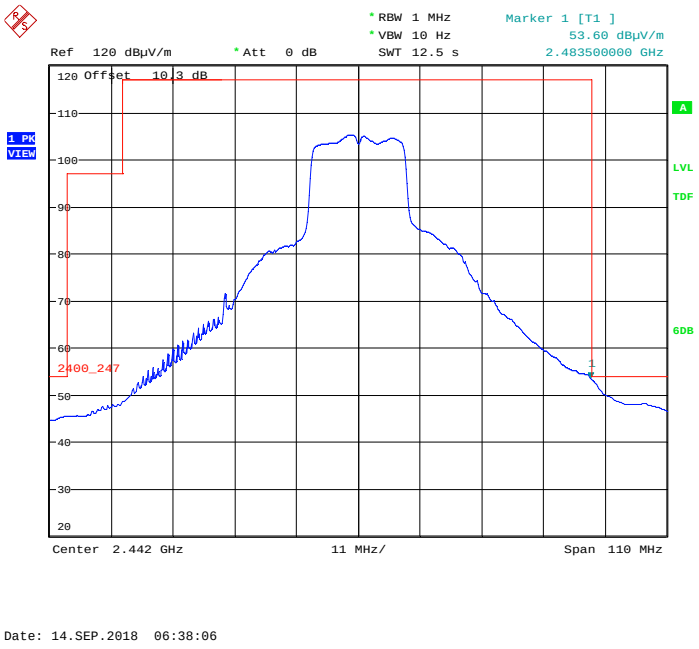
Plot 5.4.4.1.4.68. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 28, Channel 8, 2447 MHz



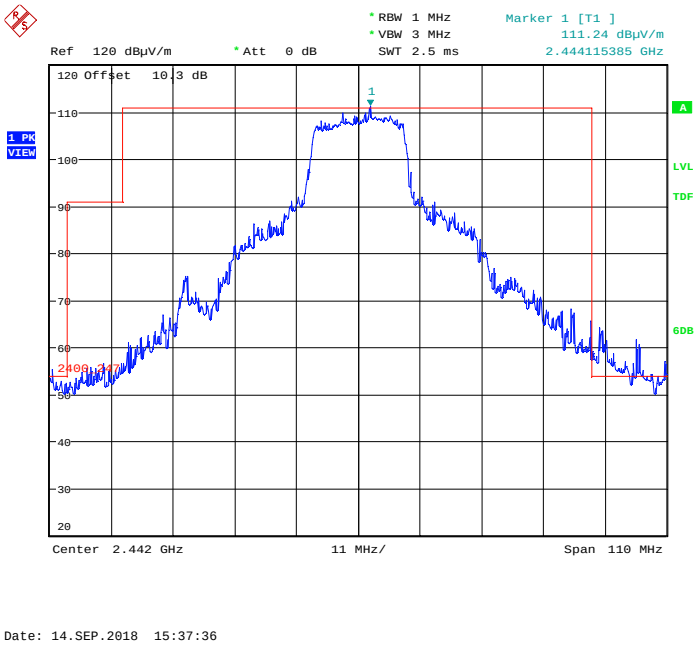
Plot 5.4.4.1.4.69. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
18 Mbps QPSK, Power Setting 30, Channel 7, 2442 MHz



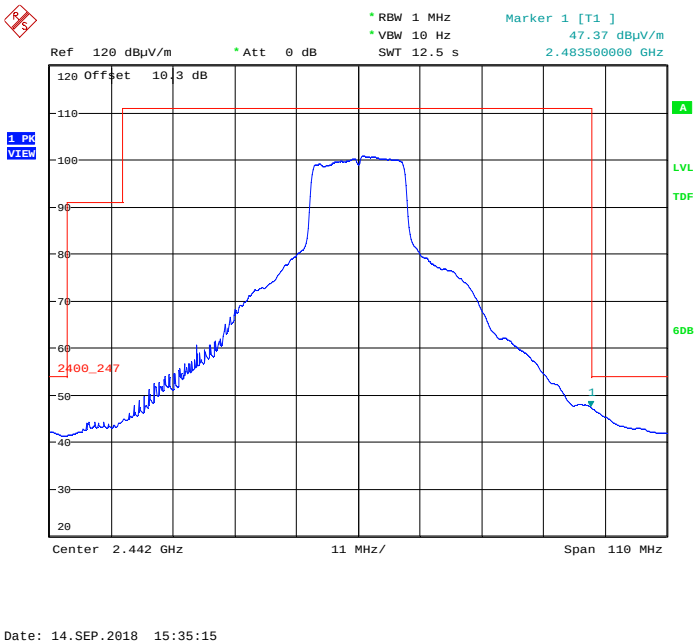
Plot 5.4.4.1.4.70. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
18 Mbps QPSK, Power Setting 30, Channel 7, 2442 MHz



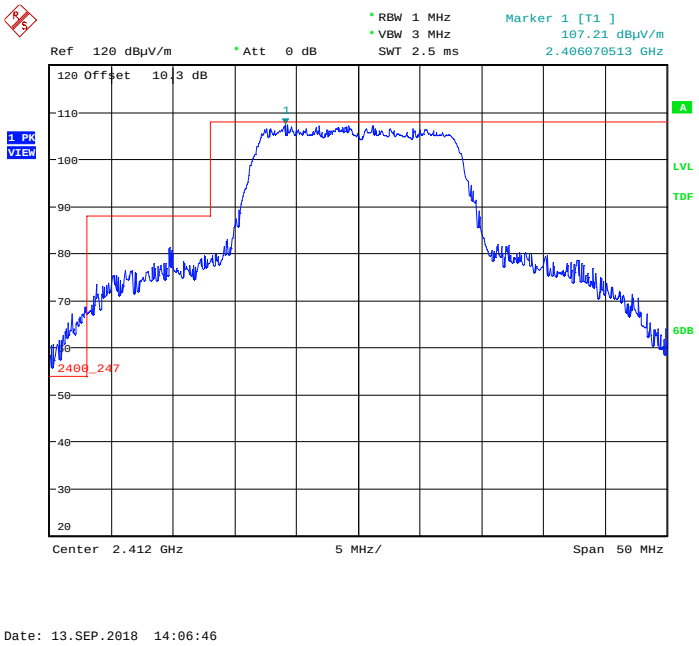
Plot 5.4.4.1.4.71. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
18 Mbps QPSK, Power Setting 30, Channel 7, 2442 MHz



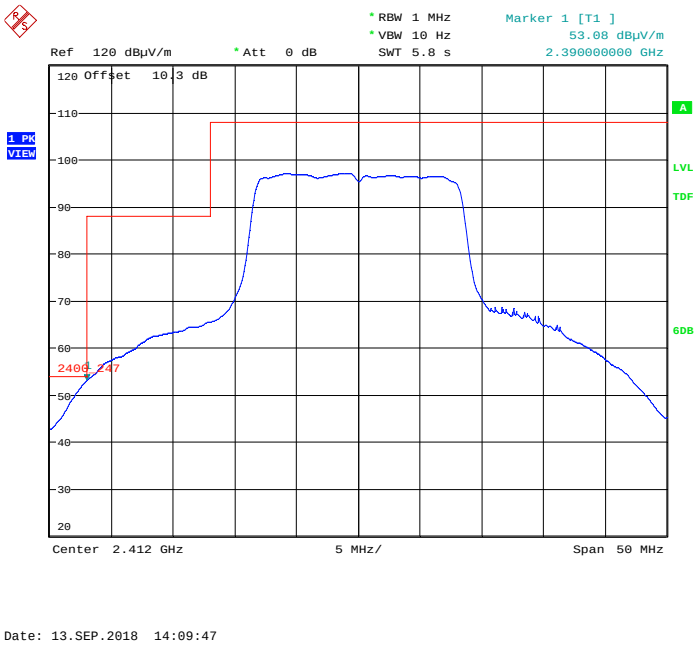
Plot 5.4.4.1.4.72. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
18 Mbps QPSK, Power Setting 30, Channel 7, 2442 MHz



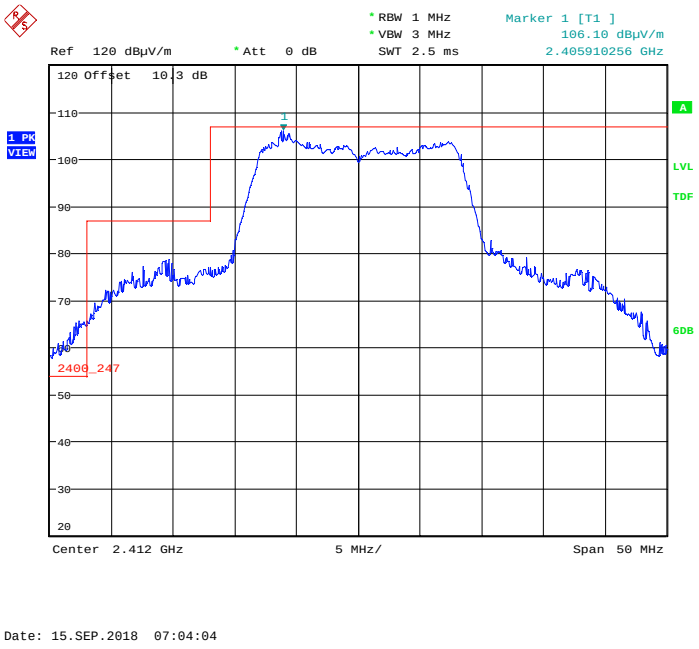
Plot 5.4.4.1.4.73. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 21, Channel 1, 2412 MHz



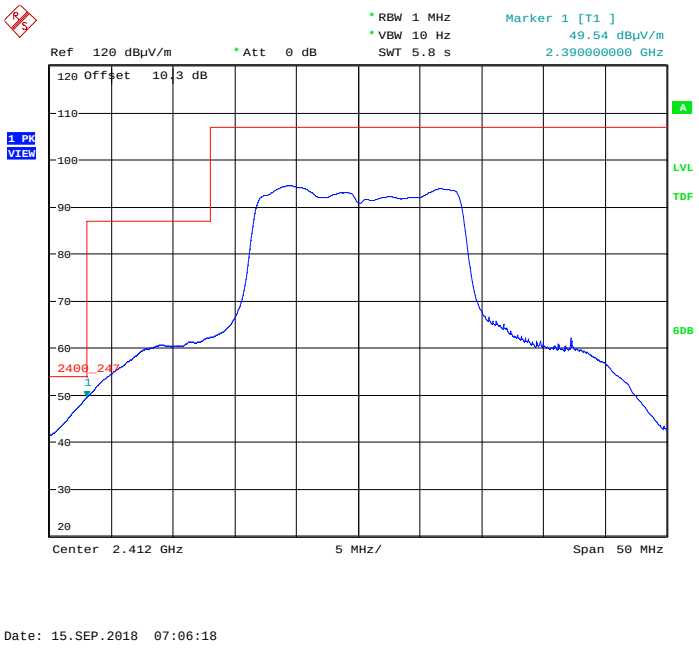
Plot 5.4.4.1.4.74. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 21, Channel 1, 2412 MHz



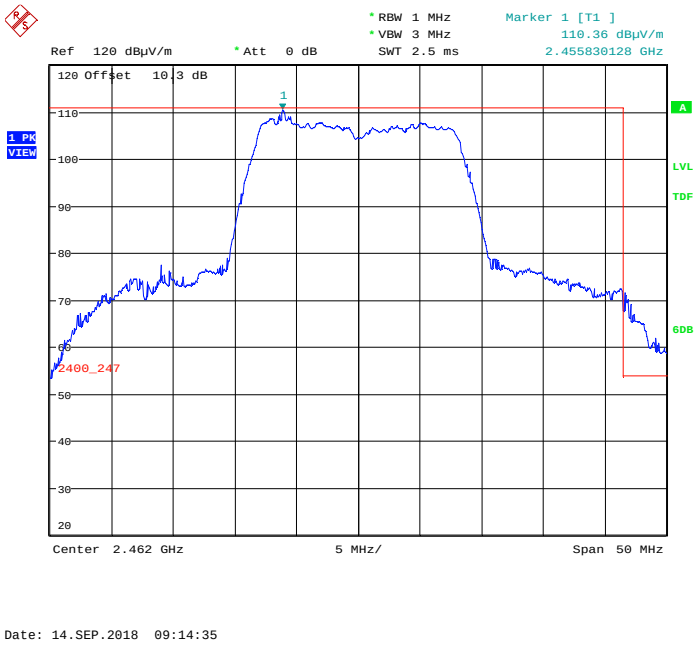
Plot 5.4.4.1.4.75. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 21, Channel 1, 2412 MHz



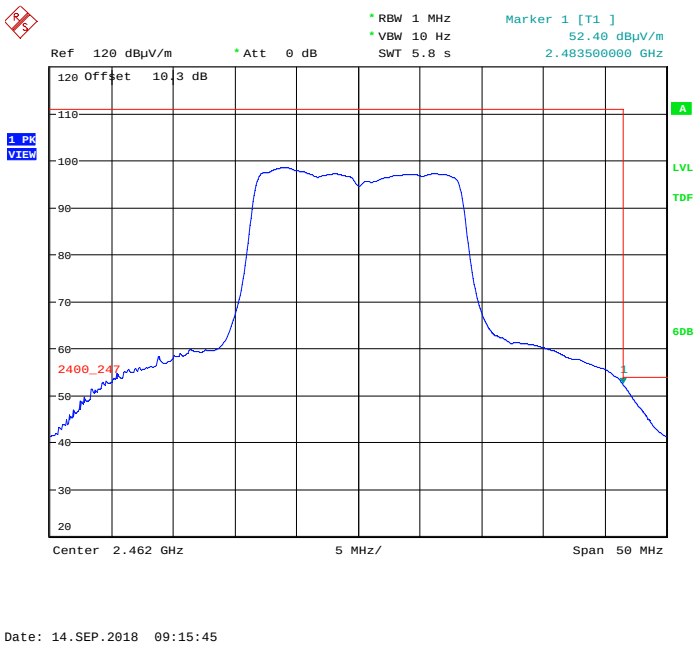
Plot 5.4.4.1.4.76. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 21, Channel 1, 2412 MHz



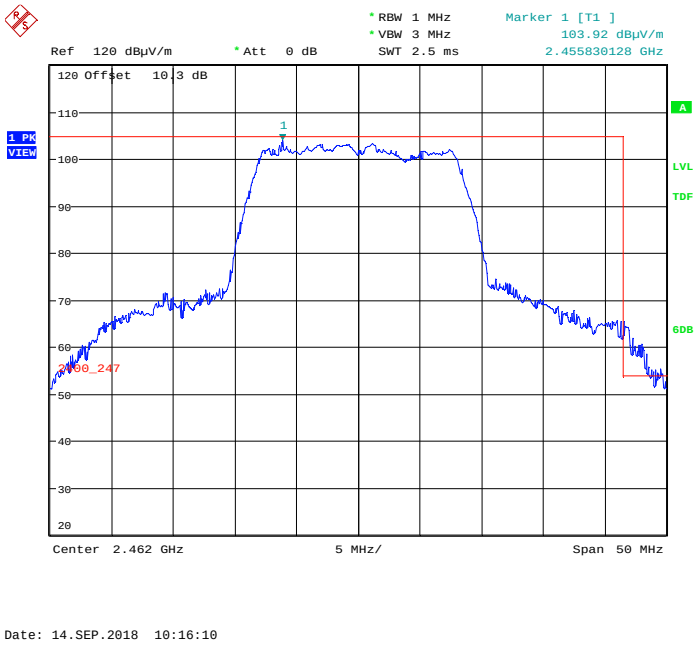
Plot 5.4.4.1.4.77. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 20, Channel 11, 2462 MHz



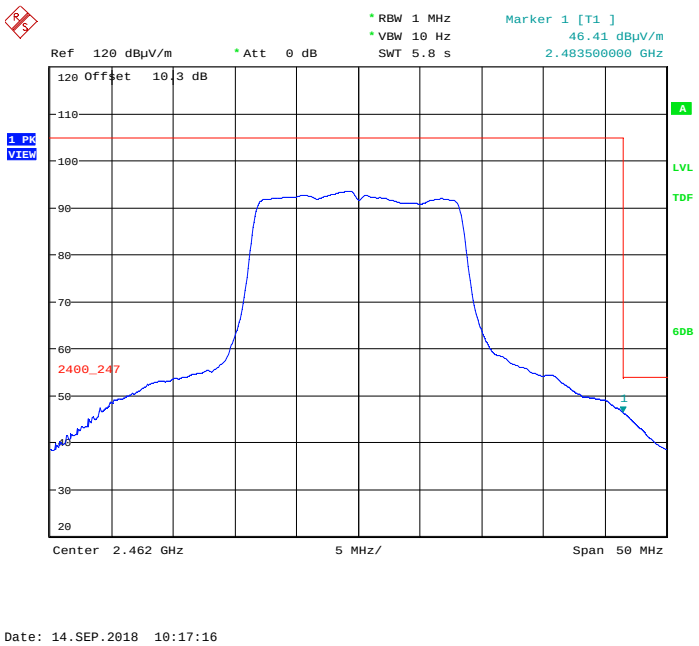
Plot 5.4.4.1.4.78. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 20, Channel 11, 2462 MHz



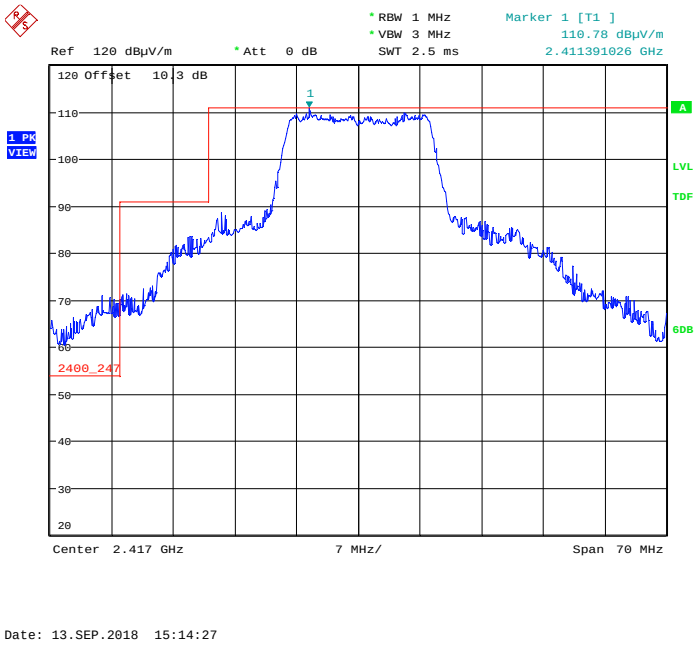
Plot 5.4.4.1.4.79. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 20, Channel 11, 2462 MHz



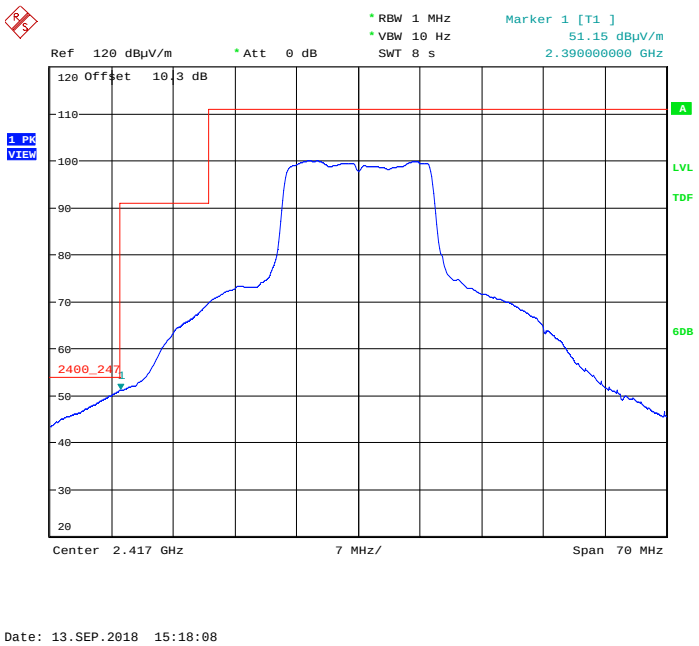
Plot 5.4.4.1.4.80. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 20, Channel 11, 2462 MHz



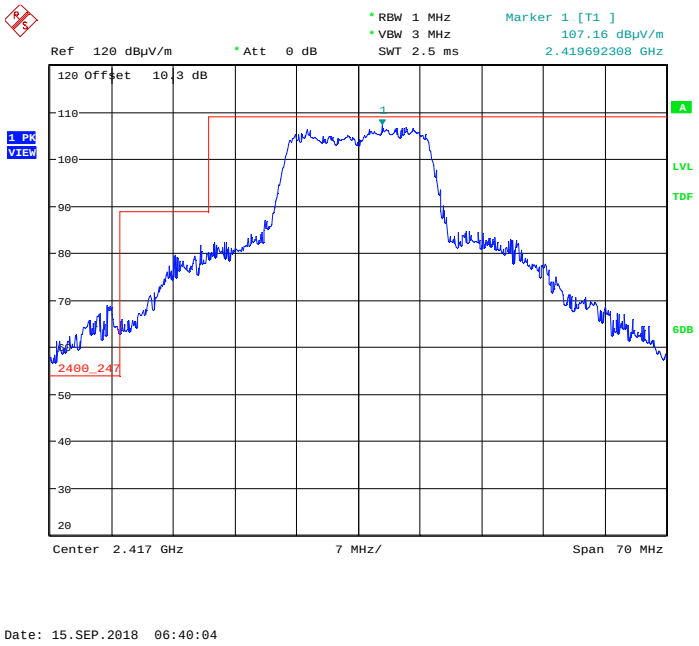
Plot 5.4.4.1.4.81. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 25, Channel 2, 2417 MHz



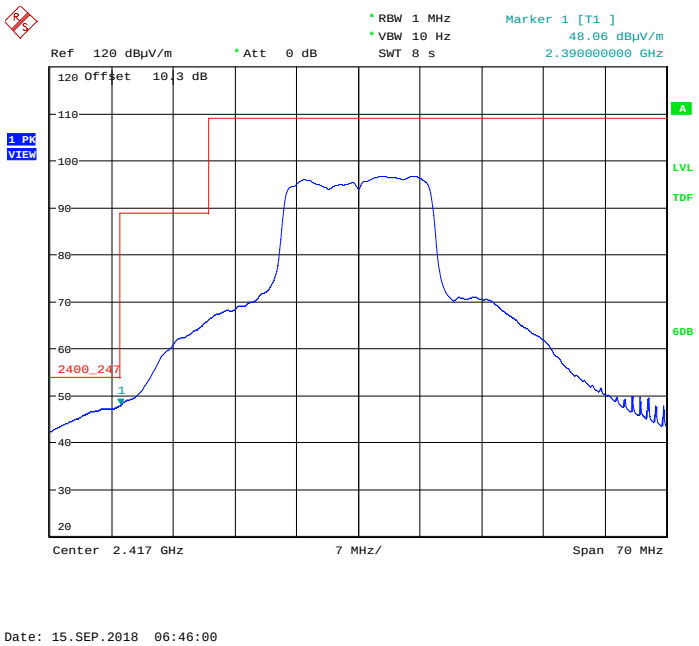
Plot 5.4.4.1.4.82. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 25, Channel 2, 2417 MHz



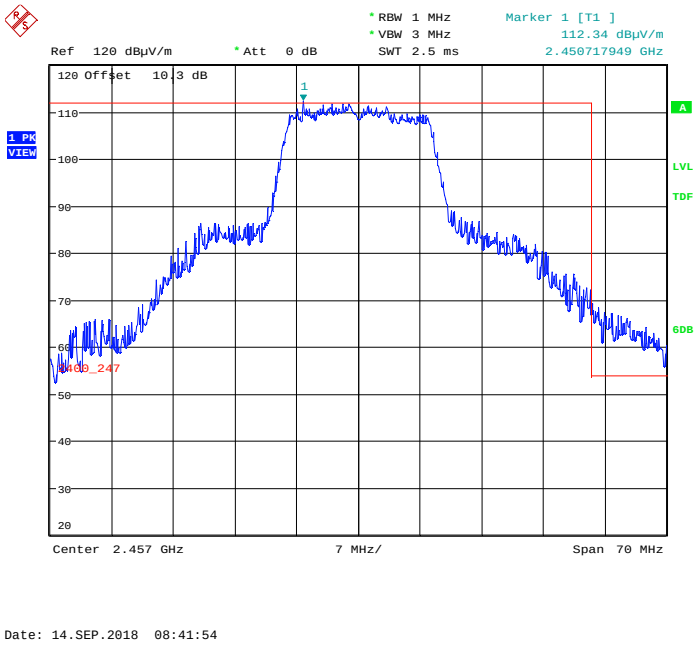
Plot 5.4.4.1.4.83. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 25, Channel 2, 2417 MHz



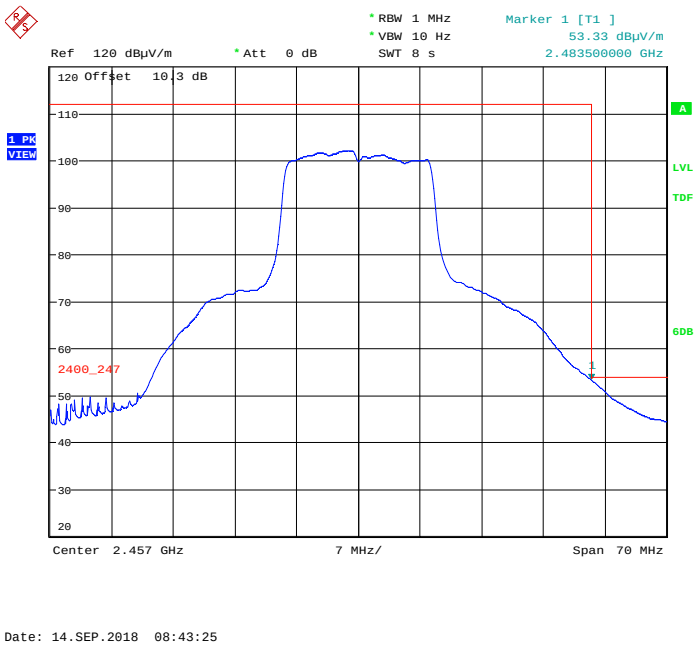
Plot 5.4.4.1.4.84. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 25, Channel 2, 2417 MHz



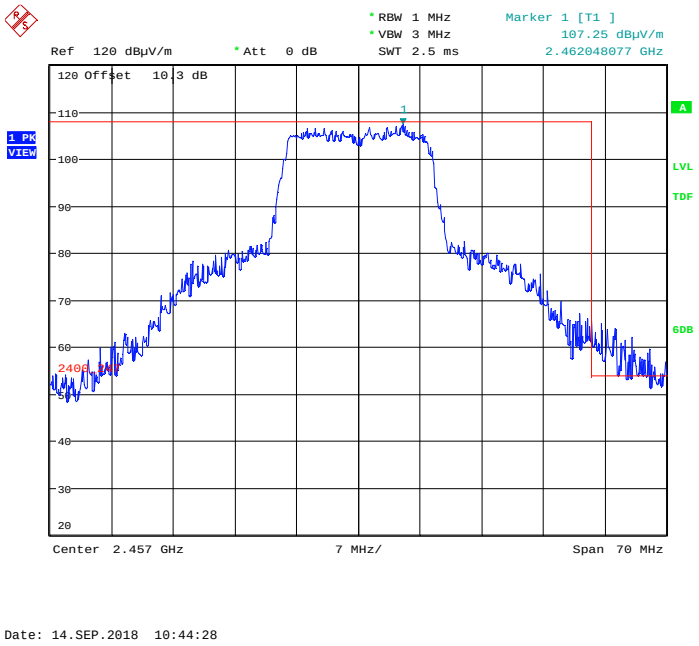
Plot 5.4.4.1.4.85. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 25, Channel 10, 2457 MHz



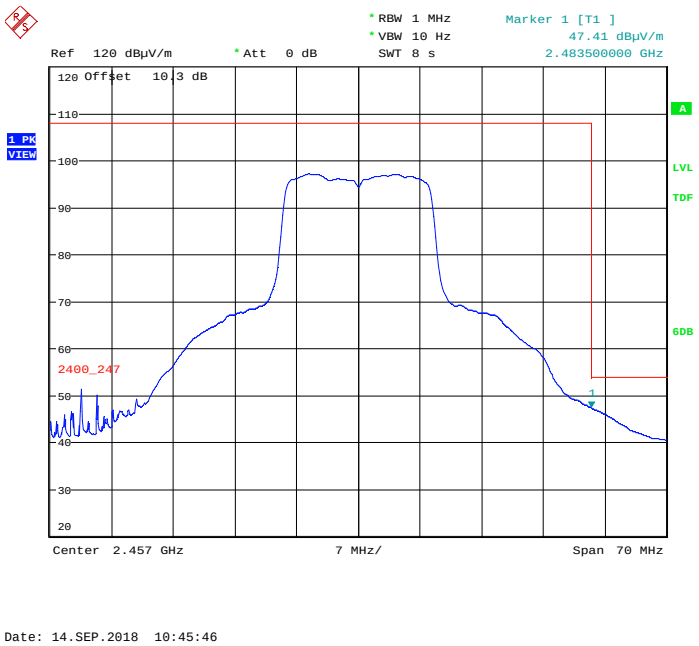
Plot 5.4.4.1.4.86. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 25, Channel 10, 2457 MHz



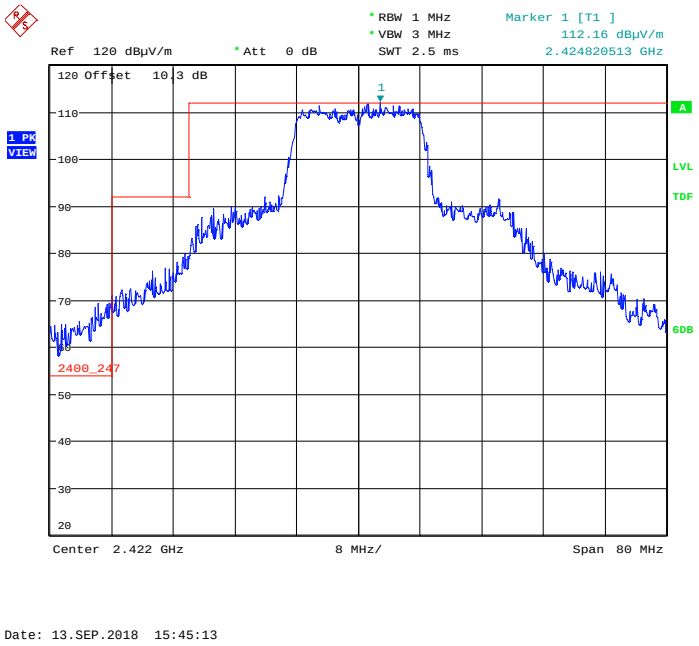
Plot 5.4.4.1.4.87. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 25, Channel 10, 2457 MHz



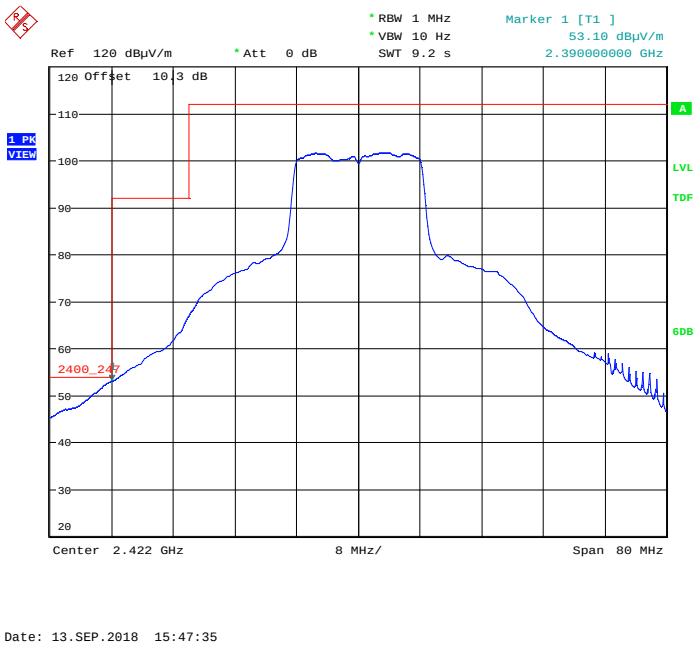
Plot 5.4.4.1.4.88. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 25, Channel 10, 2457 MHz



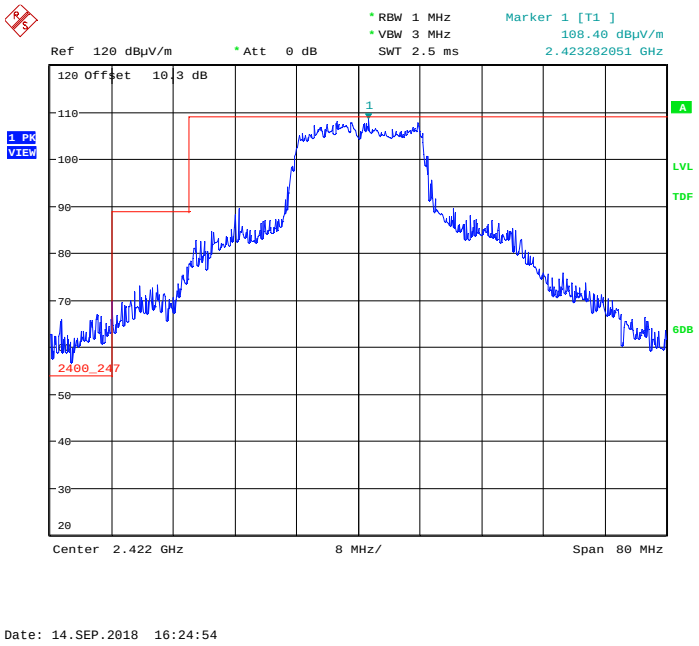
Plot 5.4.4.1.4.89. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 28, Channel 3, 2422 MHz



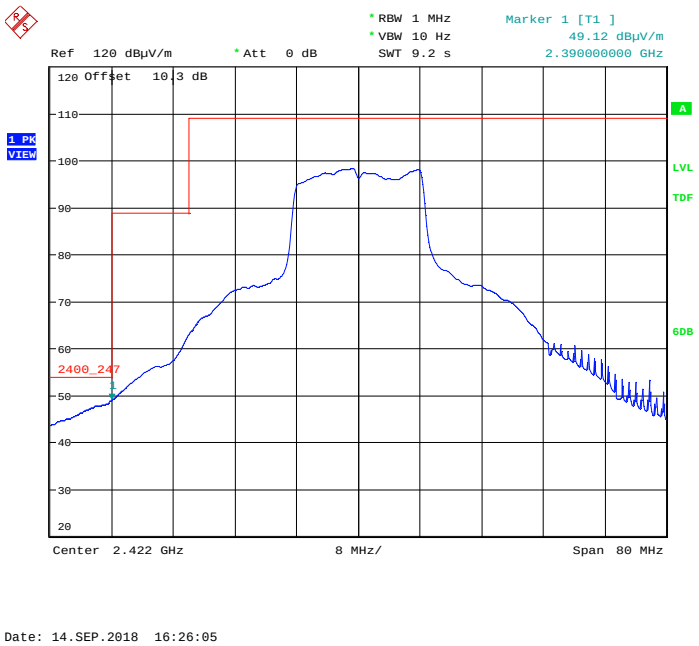
Plot 5.4.4.1.4.90. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 28, Channel 3, 2422 MHz



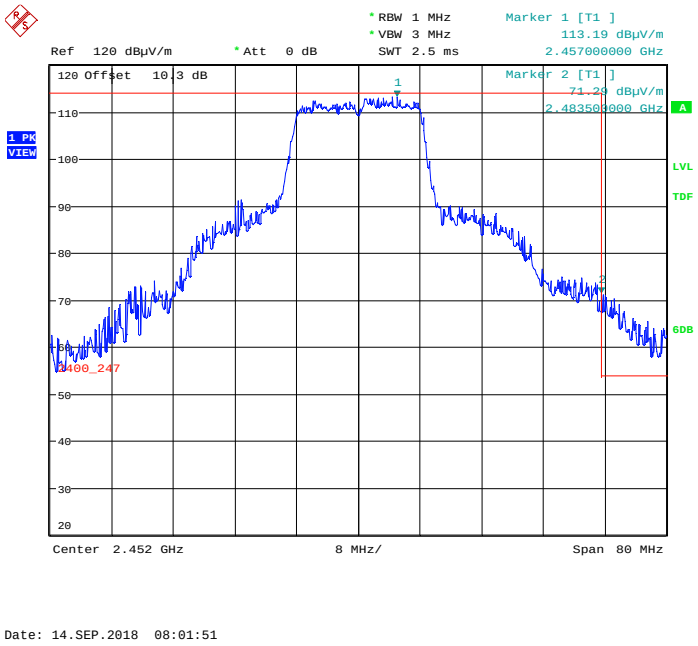
Plot 5.4.4.1.4.91. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 28, Channel 3, 2422 MHz



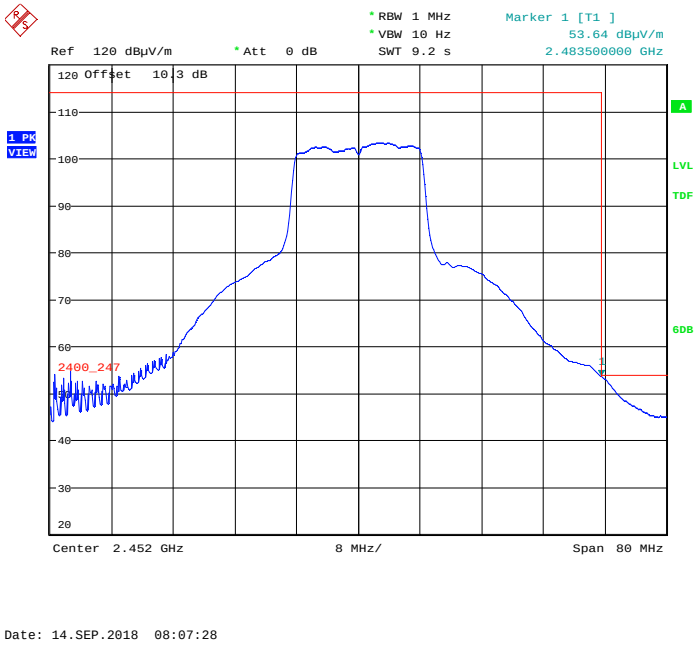
Plot 5.4.4.1.4.92. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 28, Channel 3, 2422 MHz



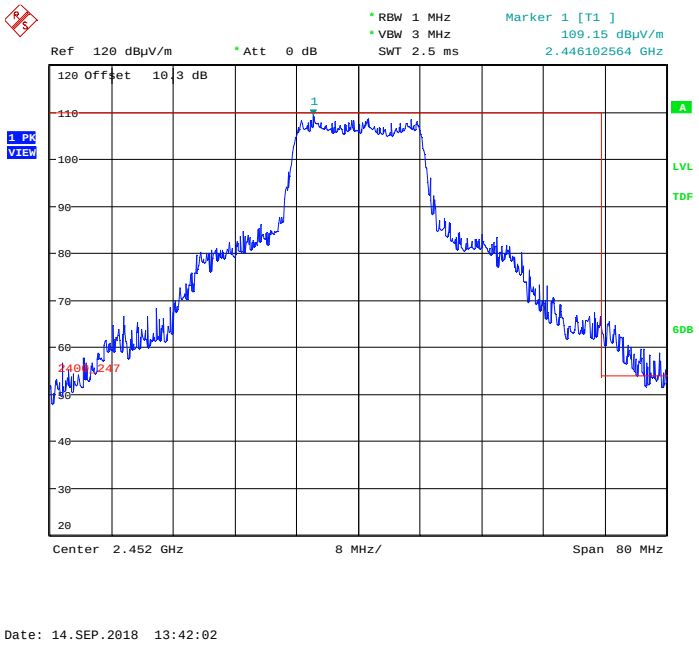
Plot 5.4.4.1.4.93. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 27, Channel 9, 2452 MHz



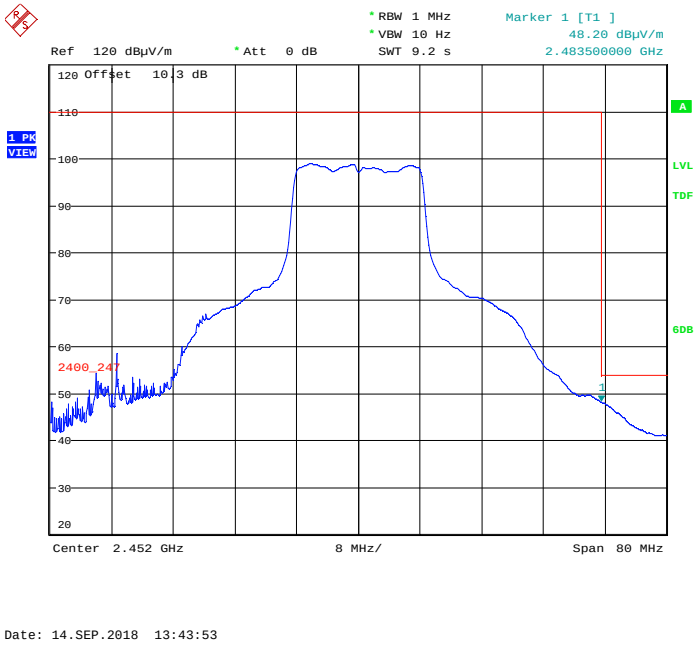
Plot 5.4.4.1.4.94. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 27, Channel 9, 2452 MHz



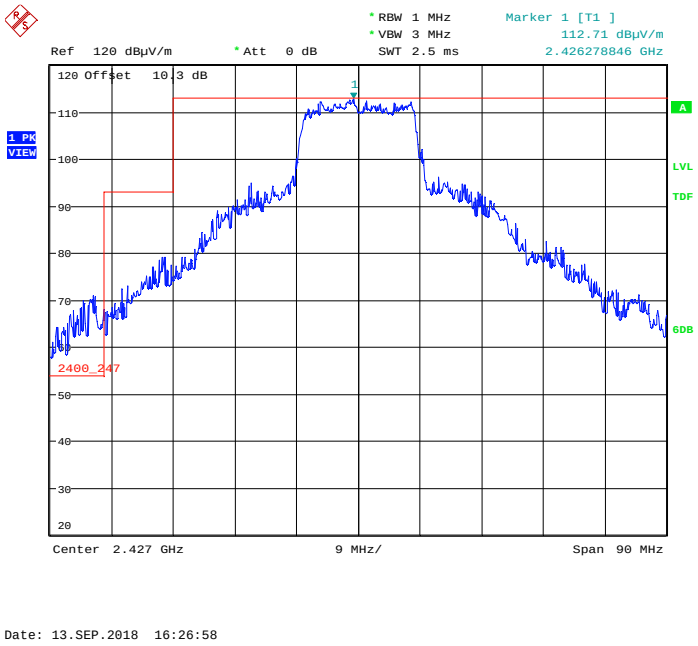
Plot 5.4.4.1.4.95. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 27, Channel 9, 2452 MHz



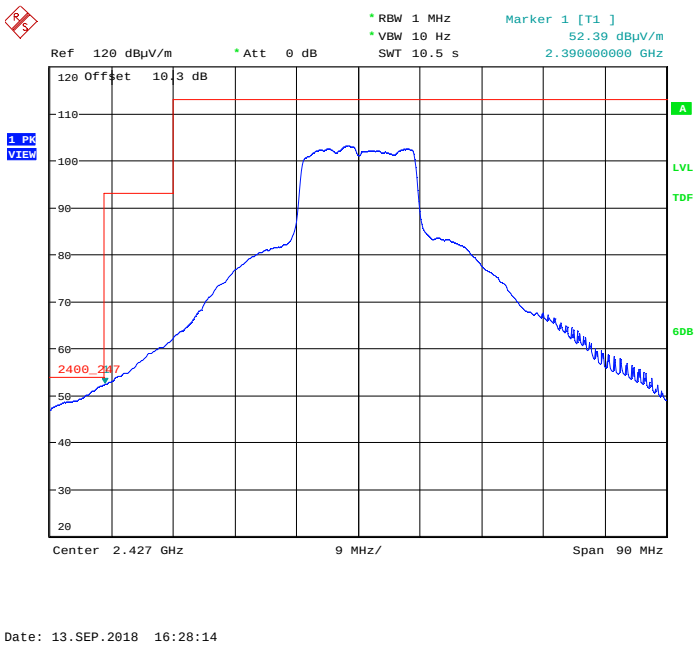
Plot 5.4.4.1.4.96. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 27, Channel 9, 2452 MHz



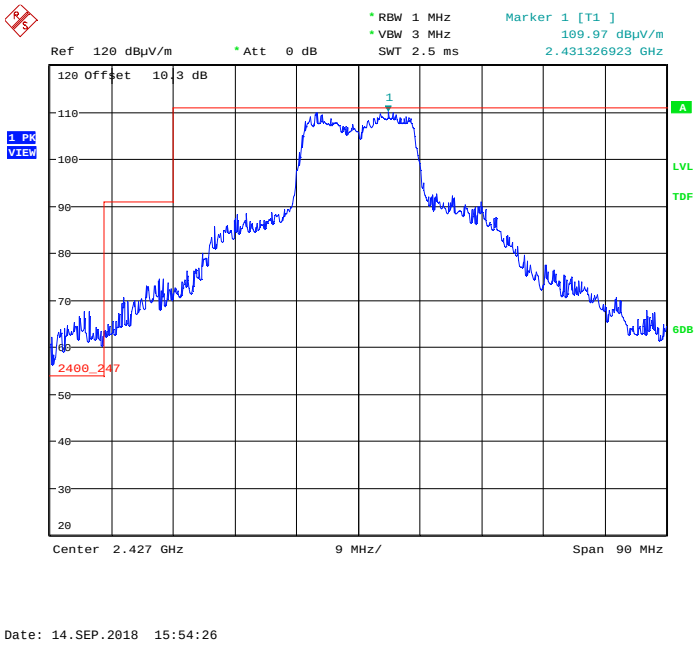
Plot 5.4.4.1.4.97. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 30, Channel 4, 2427 MHz



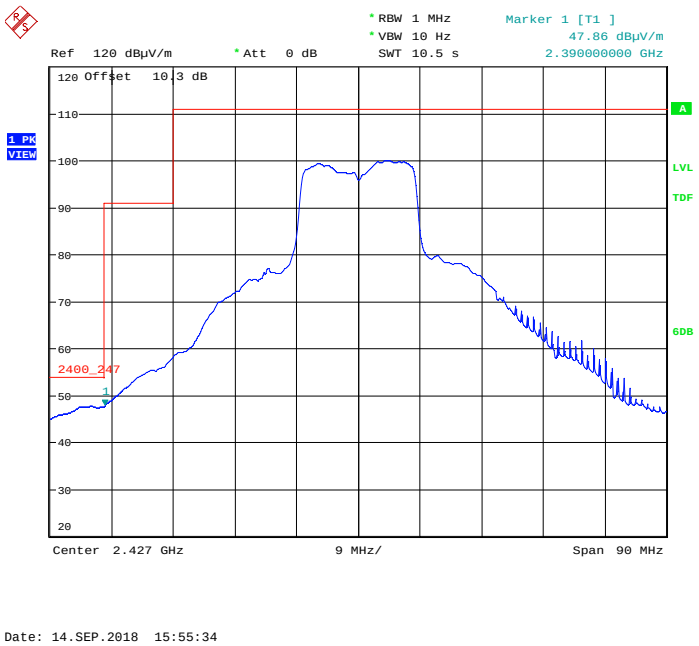
Plot 5.4.4.1.4.98. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 30, Channel 4, 2427 MHz



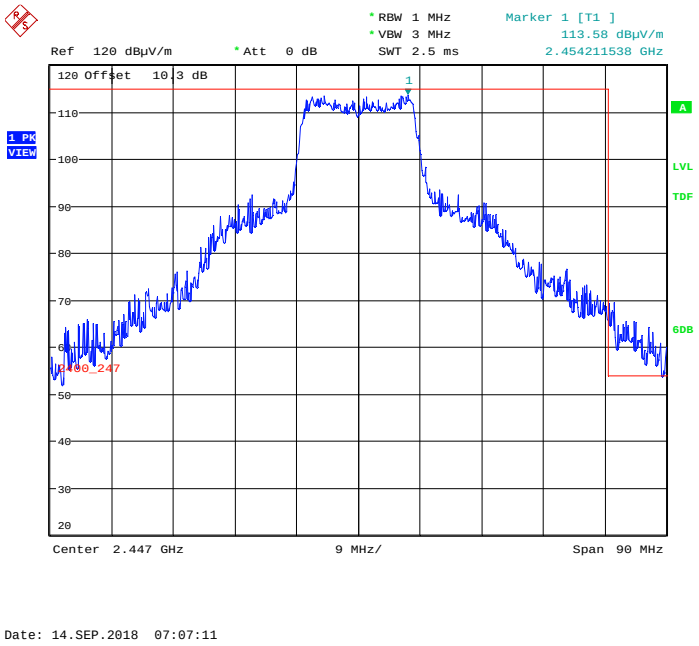
Plot 5.4.4.1.4.99. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 30, Channel 4, 2427 MHz



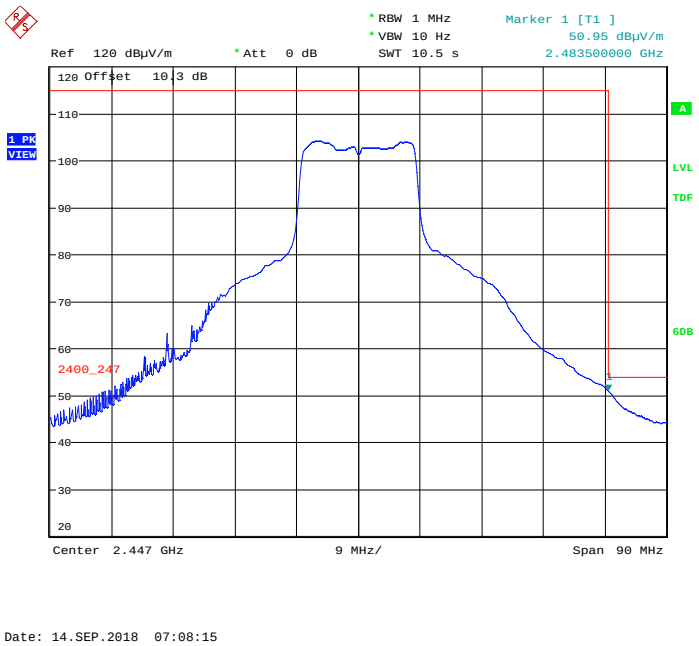
Plot 5.4.4.1.4.100. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 30, Channel 4, 2427 MHz



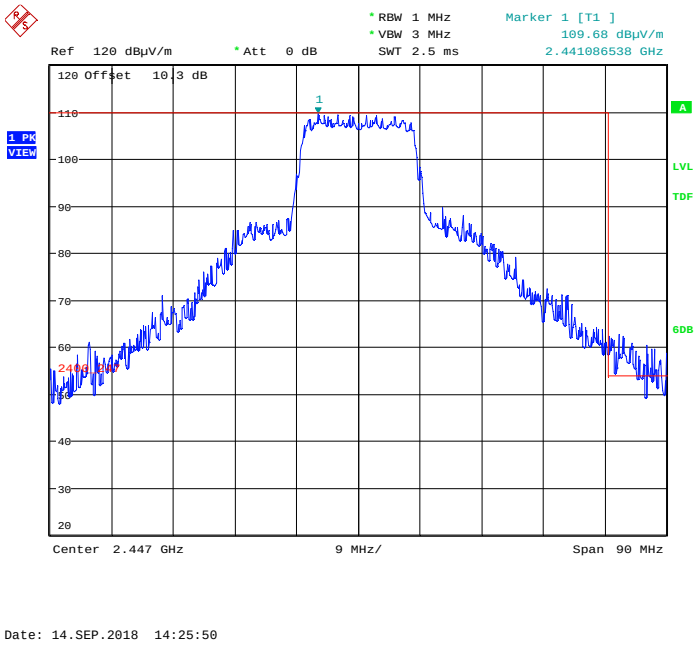
Plot 5.4.4.1.4.101. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 28, Channel 8, 2447 MHz



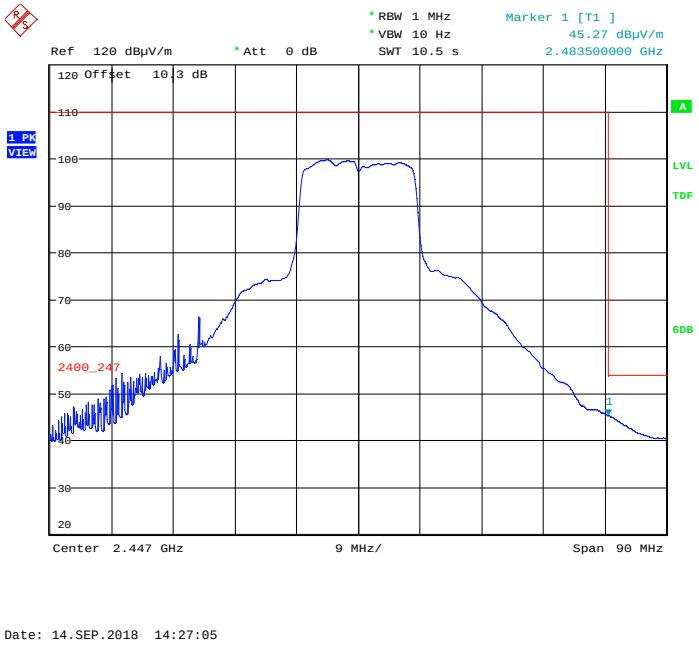
Plot 5.4.4.1.4.102. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 28, Channel 8, 2447 MHz



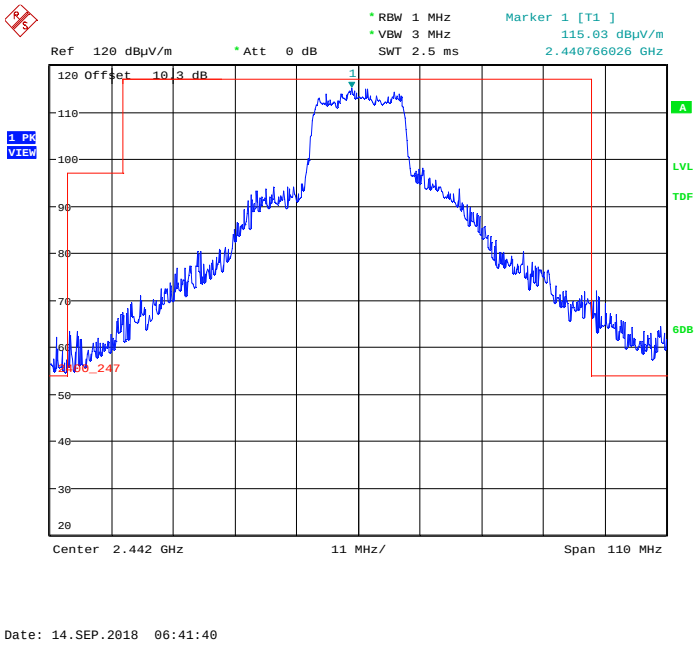
Plot 5.4.4.1.4.103. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 28, Channel 8, 2447 MHz



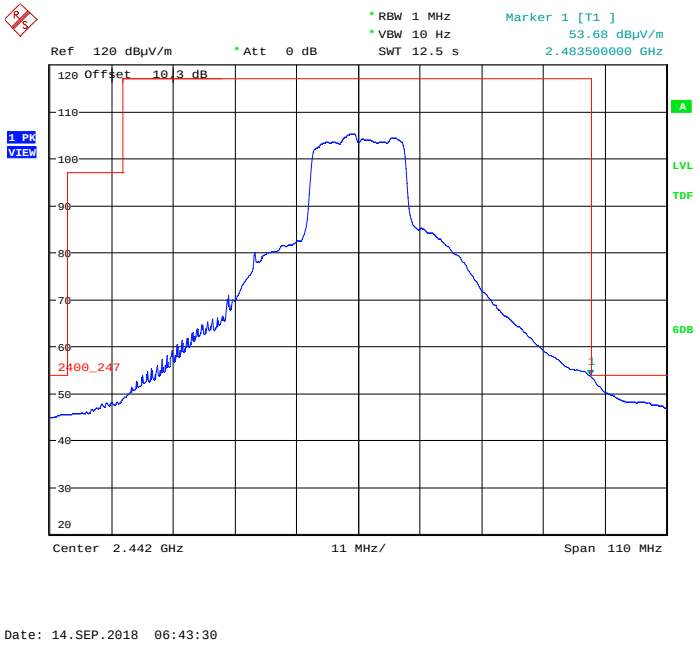
Plot 5.4.4.1.4.104. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 28, Channel 8, 2447 MHz



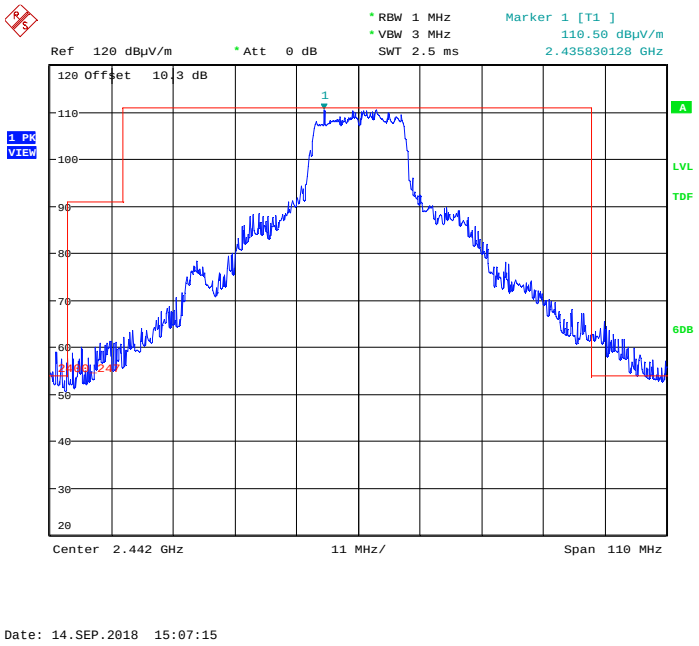
Plot 5.4.4.1.4.105. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
36 Mbps 16-QAM, Power Setting 30, Channel 7, 2442 MHz



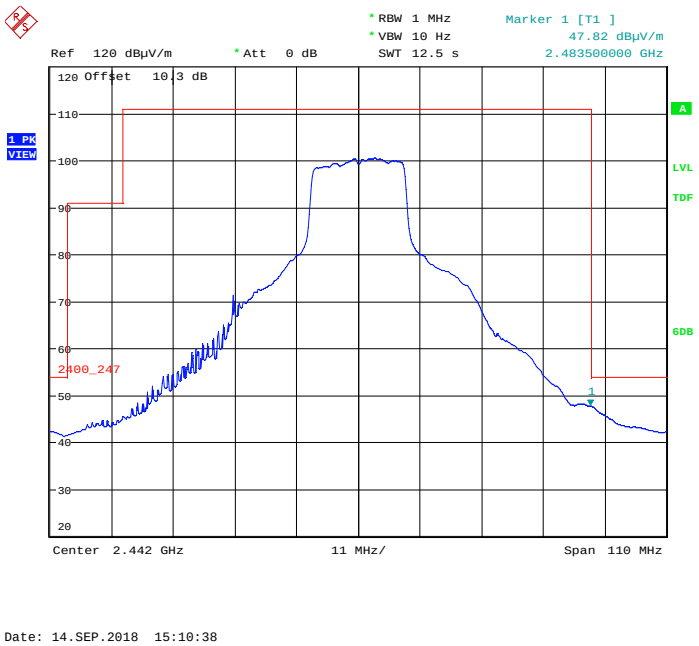
Plot 5.4.4.1.4.106. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
36 Mbps 16-QAM, Power Setting 30, Channel 7, 2442 MHz



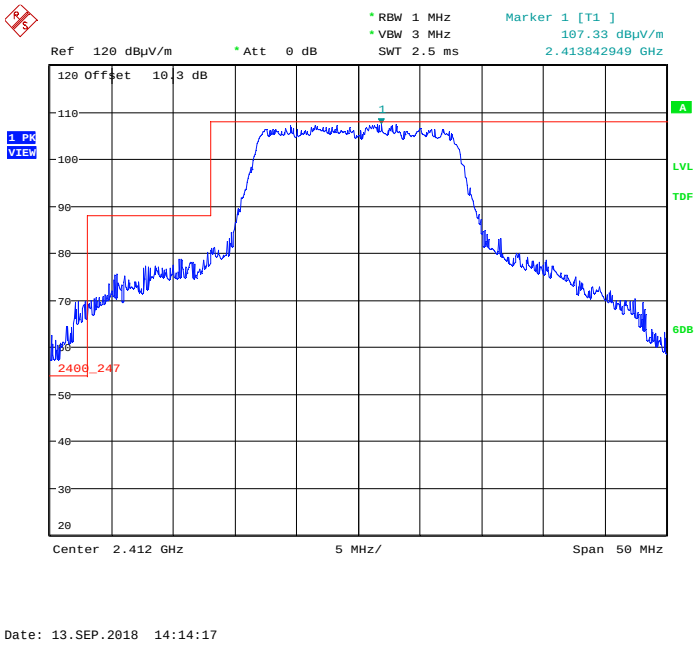
Plot 5.4.4.1.4.107. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
36 Mbps 16-QAM, Power Setting 30, Channel 7, 2442 MHz



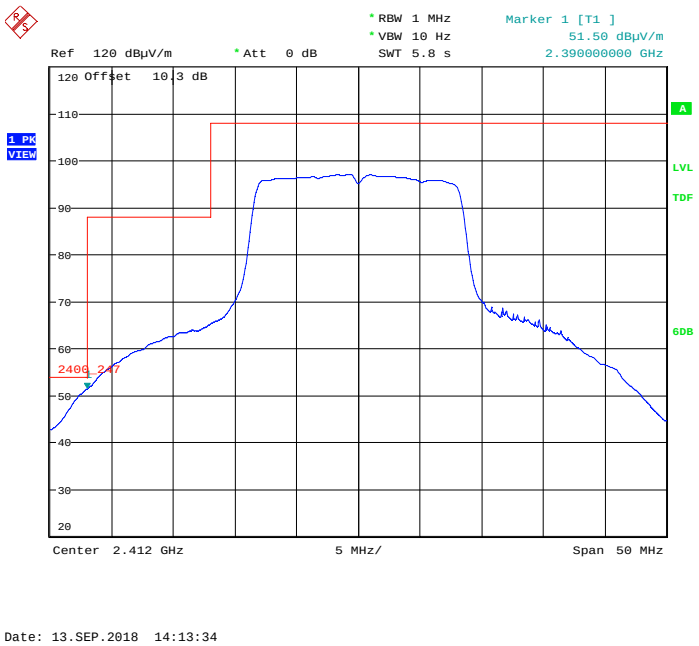
Plot 5.4.4.1.4.108. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
36 Mbps 16-QAM, Power Setting 30, Channel 7, 2442 MHz



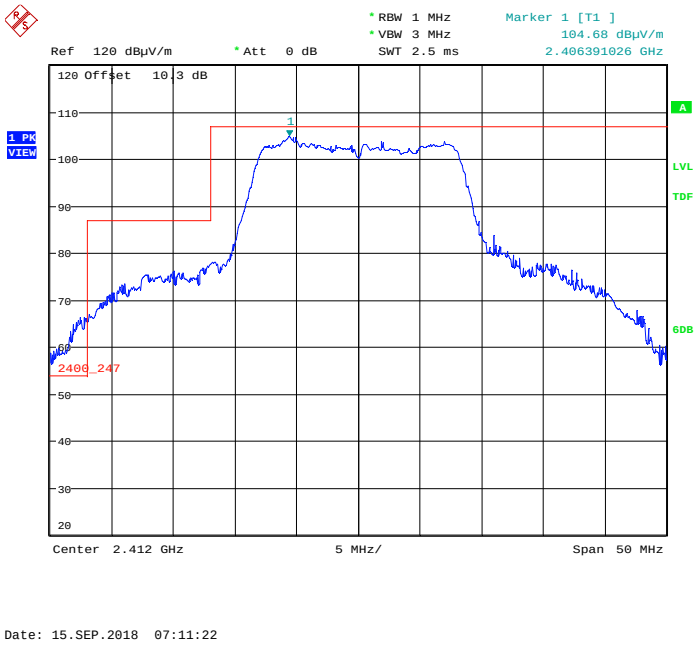
Plot 5.4.4.1.4.109. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 21, Channel 1, 2412 MHz



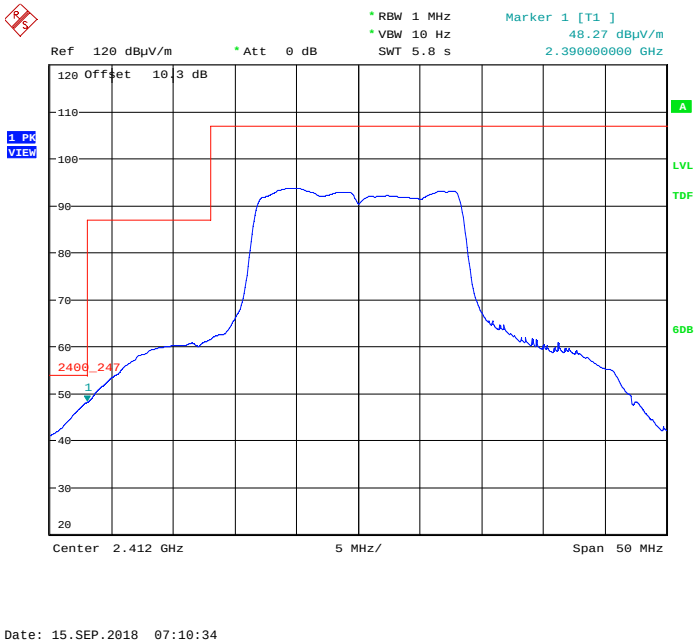
Plot 5.4.4.1.4.110. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 21, Channel 1, 2412 MHz



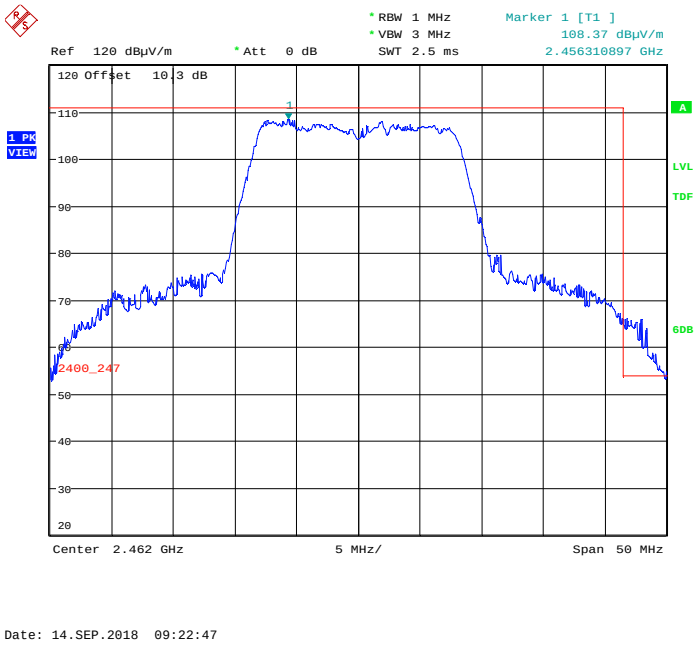
Plot 5.4.4.1.4.111. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 21, Channel 1, 2412 MHz



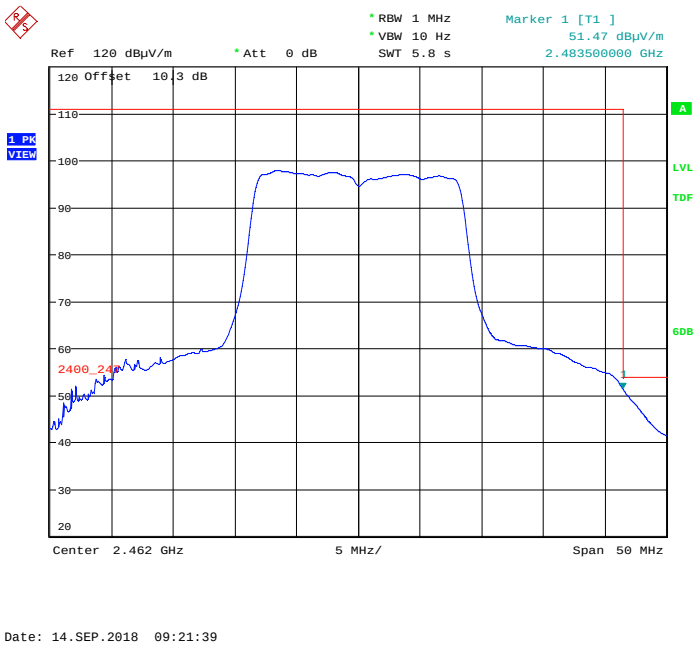
Plot 5.4.4.1.4.112. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 21, Channel 1, 2412 MHz



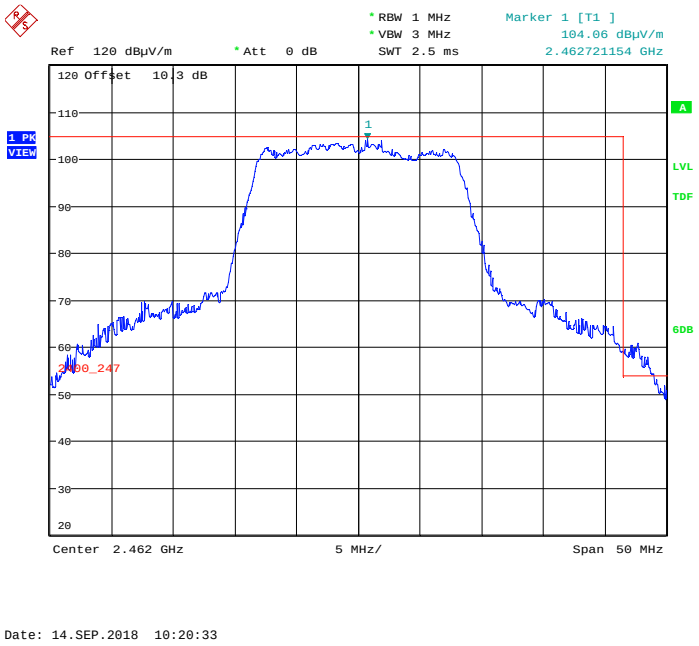
Plot 5.4.4.1.4.113. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 20, Channel 11, 2462 MHz



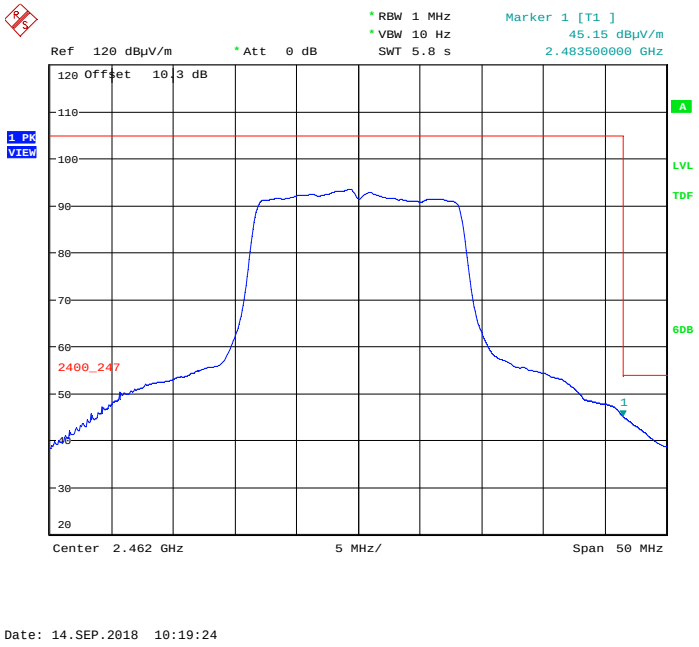
Plot 5.4.4.1.4.114. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 20, Channel 11, 2462 MHz



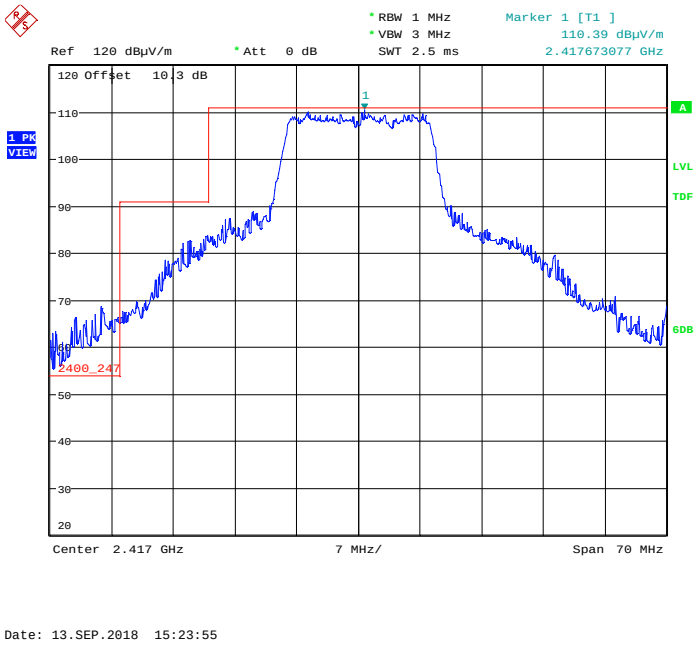
Plot 5.4.4.1.4.115. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 20, Channel 11, 2462 MHz



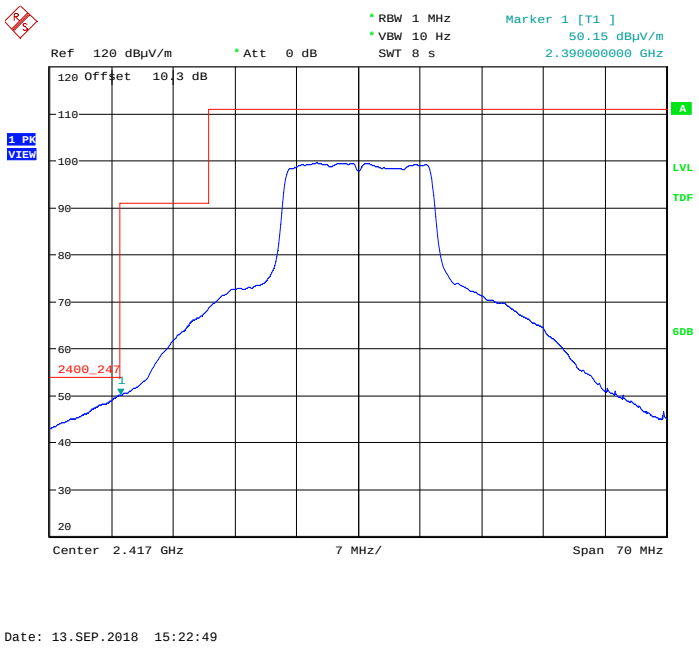
Plot 5.4.4.1.4.116. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 20, Channel 11, 2462 MHz



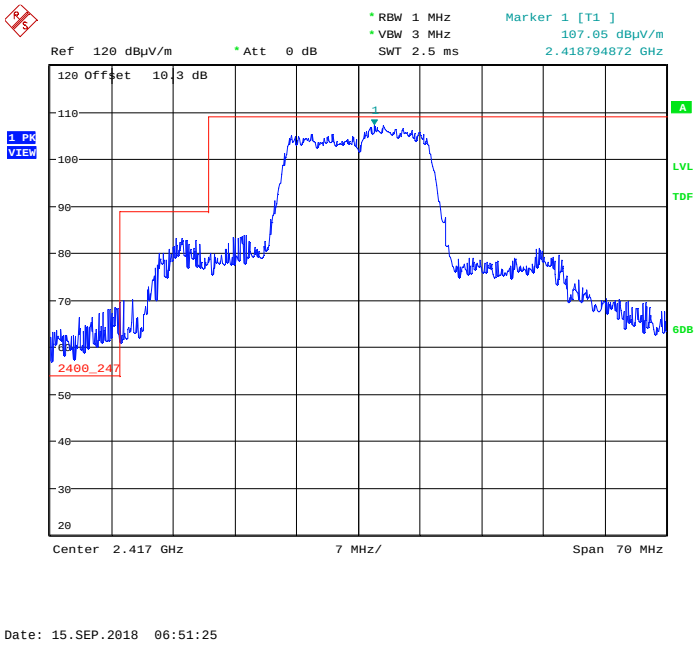
Plot 5.4.4.1.4.117. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 25, Channel 2, 2417 MHz



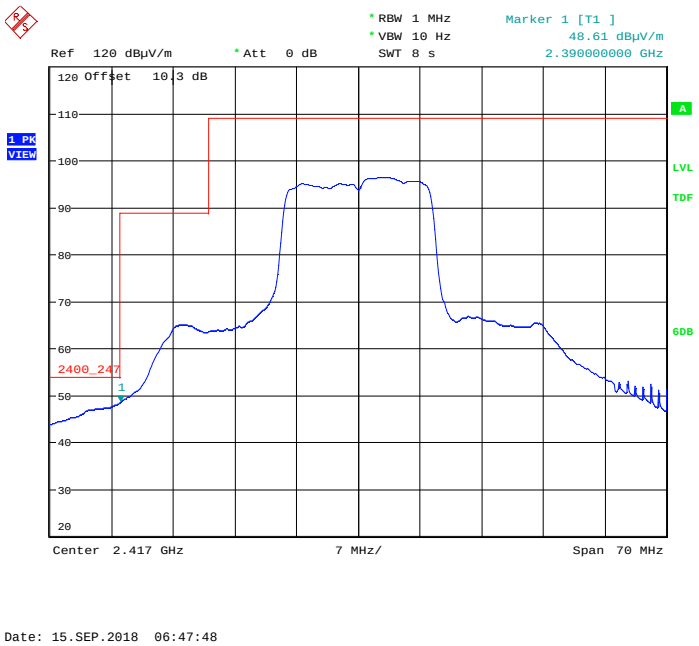
Plot 5.4.4.1.4.118. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 25, Channel 2, 2417 MHz



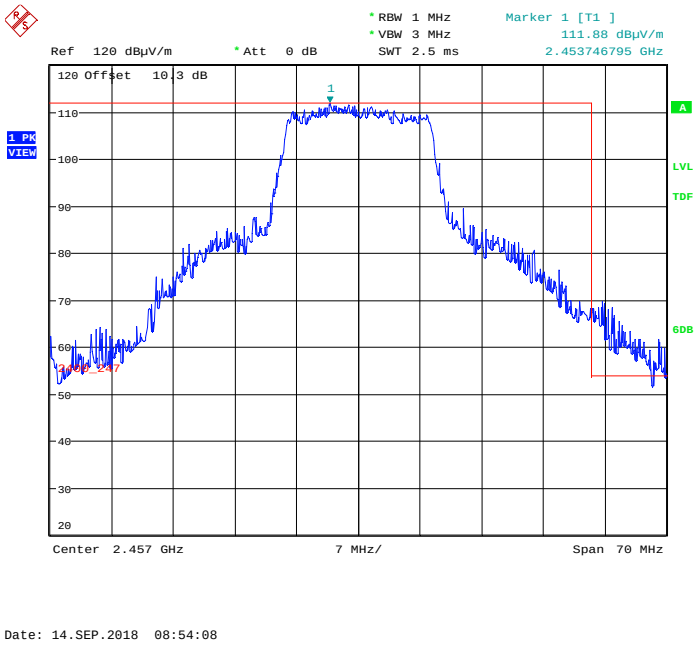
Plot 5.4.4.1.4.119. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 25, Channel 2, 2417 MHz



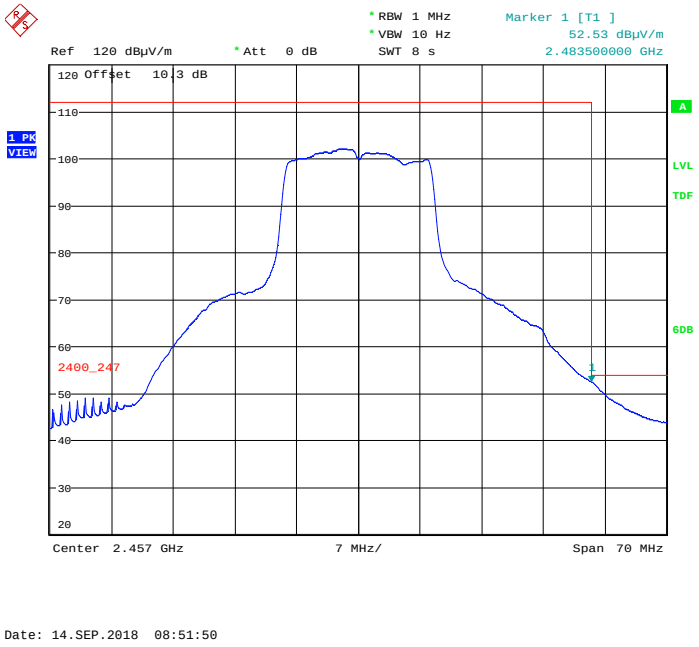
Plot 5.4.4.1.4.120. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 25, Channel 2, 2417 MHz



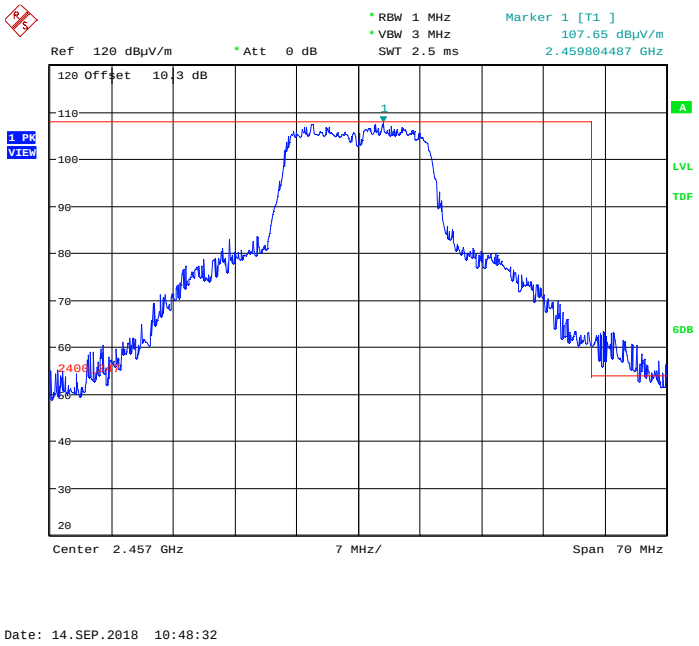
Plot 5.4.4.1.4.121. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 25, Channel 10, 2457 MHz



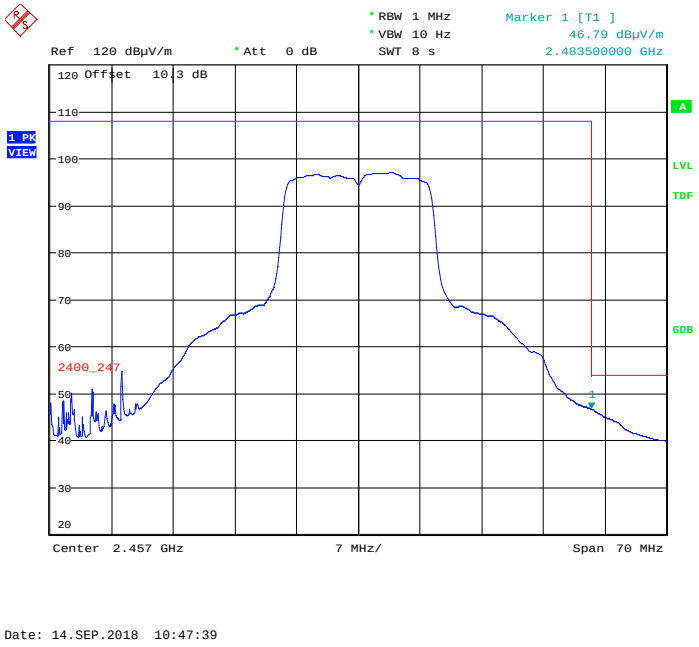
Plot 5.4.4.1.4.122. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 25, Channel 10, 2457 MHz



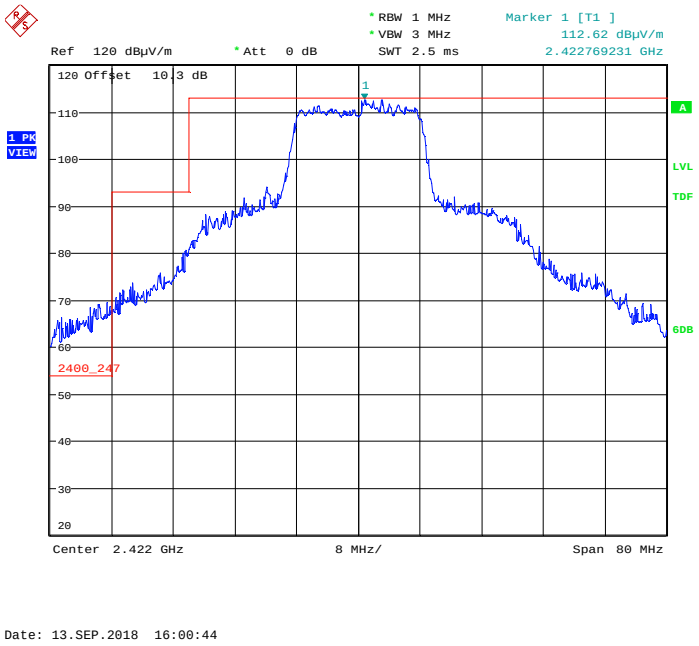
Plot 5.4.4.1.4.123. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 25, Channel 10, 2457 MHz



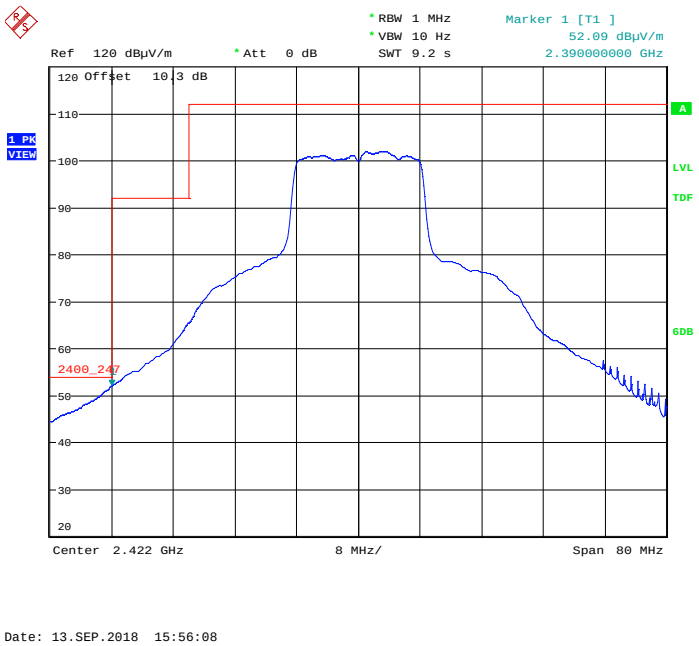
Plot 5.4.4.1.4.124. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 25, Channel 10, 2457 MHz



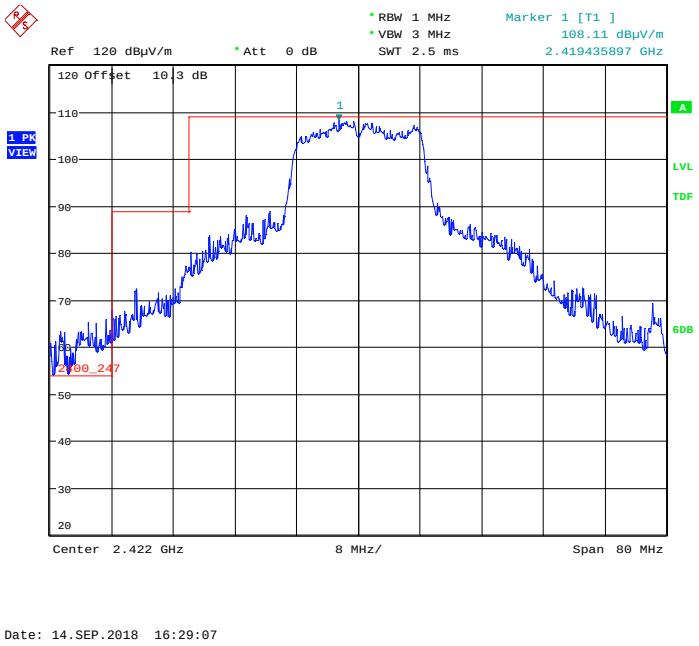
Plot 5.4.4.1.4.125. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 28, Channel 3, 2422 MHz



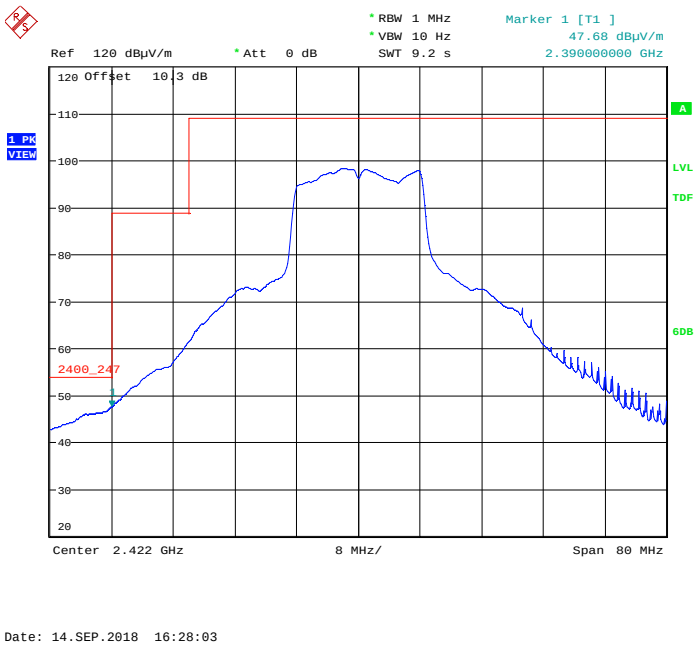
Plot 5.4.4.1.4.126. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 28, Channel 3, 2422 MHz



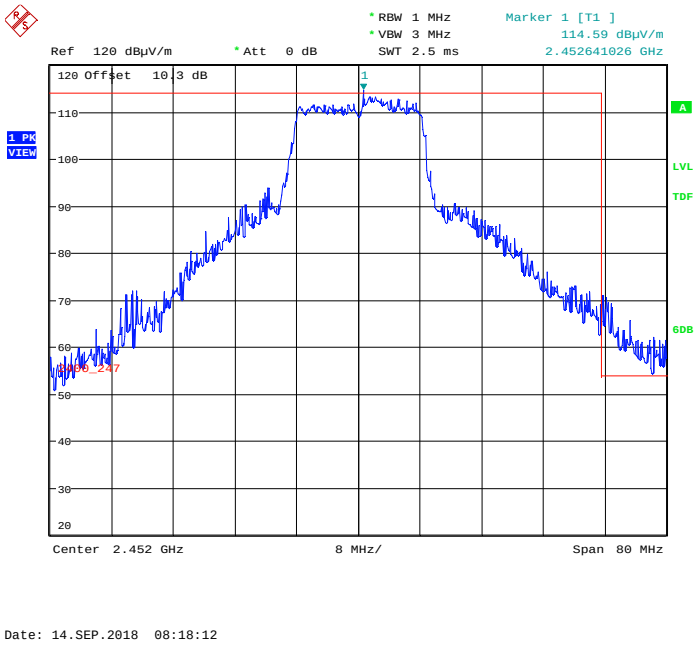
Plot 5.4.4.1.4.127. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 28, Channel 3, 2422 MHz



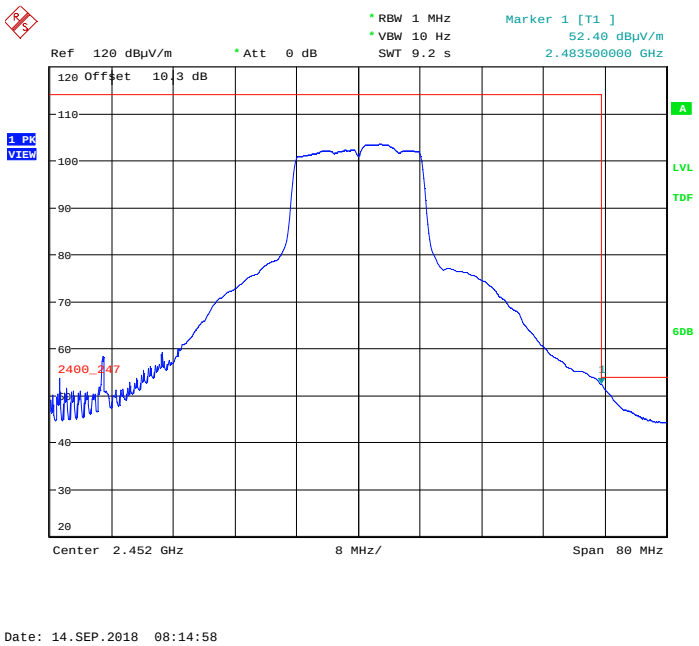
Plot 5.4.4.1.4.128. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 28, Channel 3, 2422 MHz



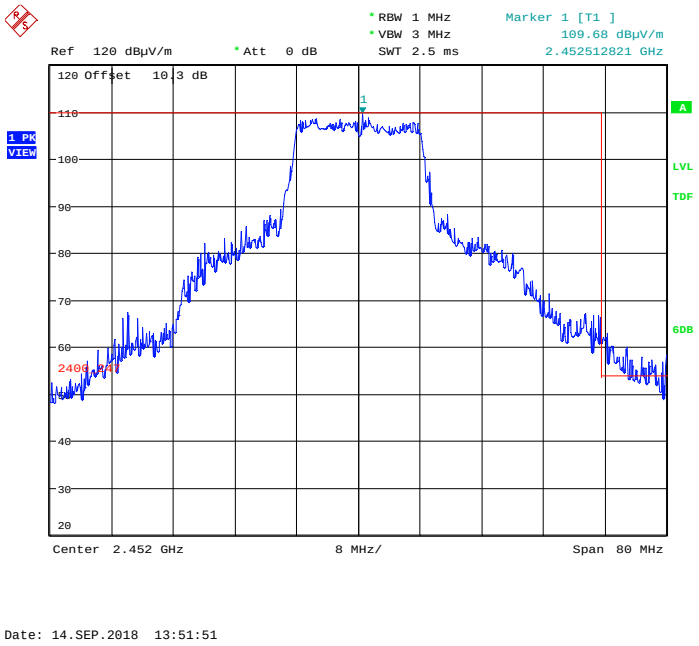
Plot 5.4.4.1.4.129. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 27, Channel 9, 2452 MHz



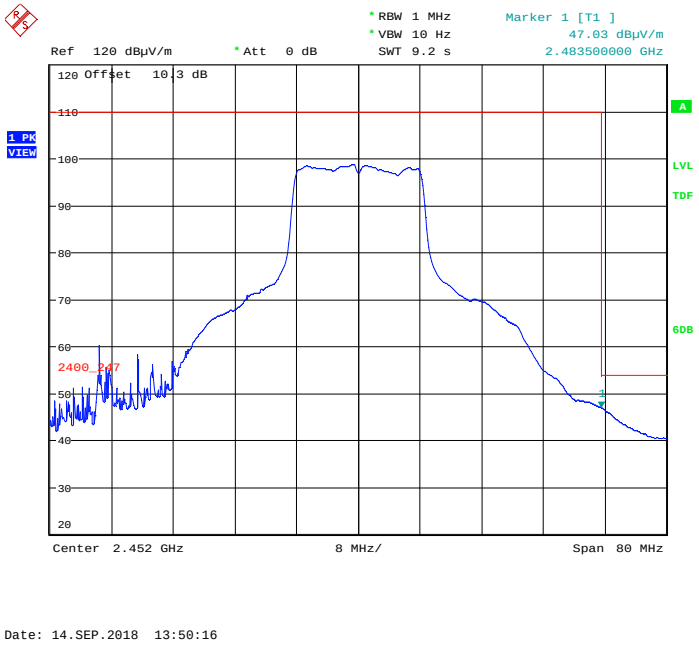
Plot 5.4.4.1.4.130. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 27, Channel 9, 2452 MHz



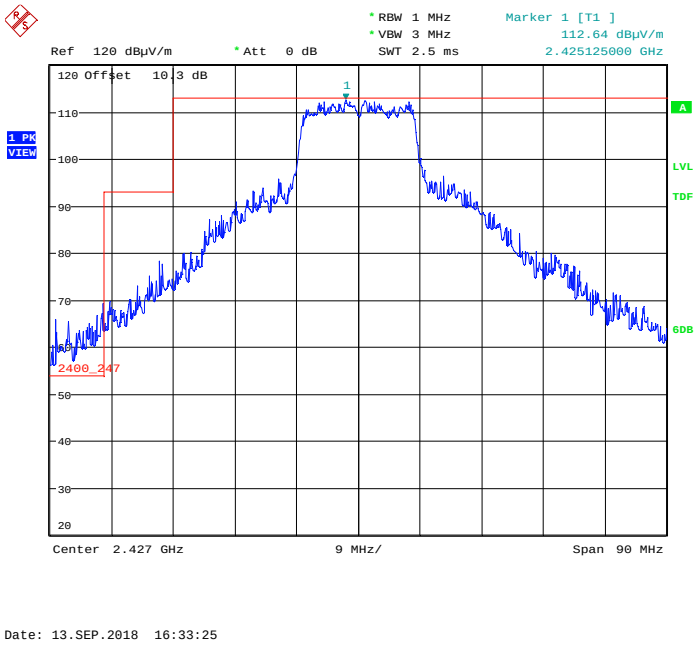
Plot 5.4.4.1.4.131. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 27, Channel 9, 2452 MHz



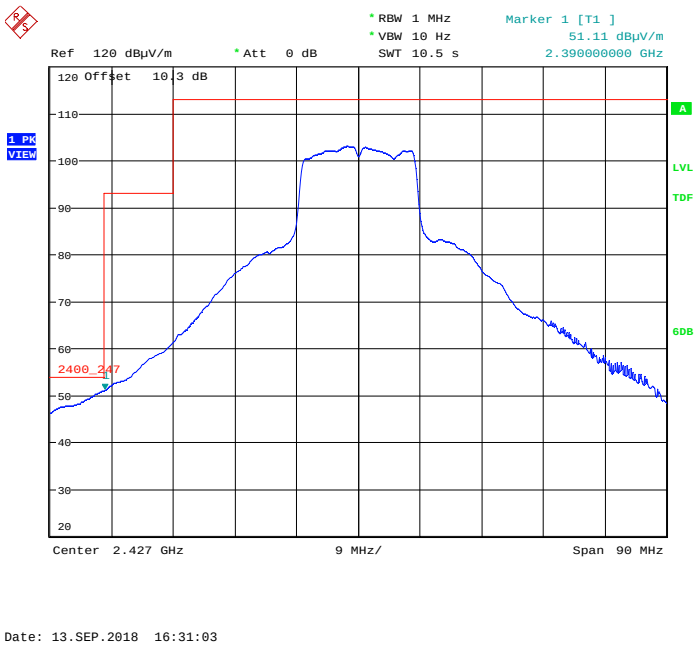
Plot 5.4.4.1.4.132. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 27, Channel 9, 2452 MHz



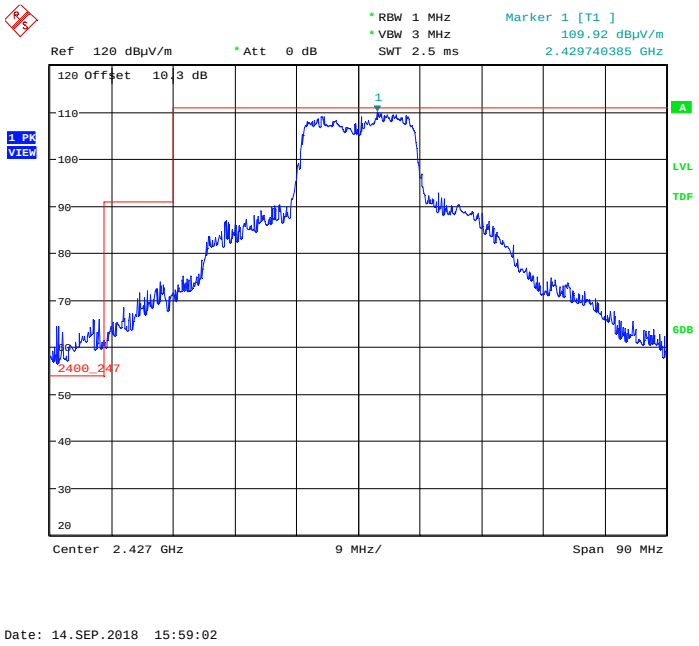
Plot 5.4.4.1.4.133. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 30, Channel 4, 2427 MHz



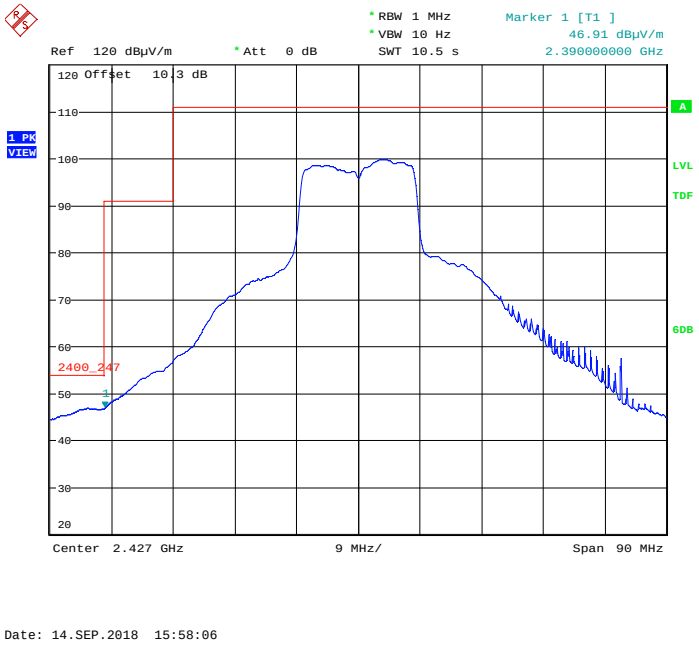
Plot 5.4.4.1.4.134. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 30, Channel 4, 2427 MHz



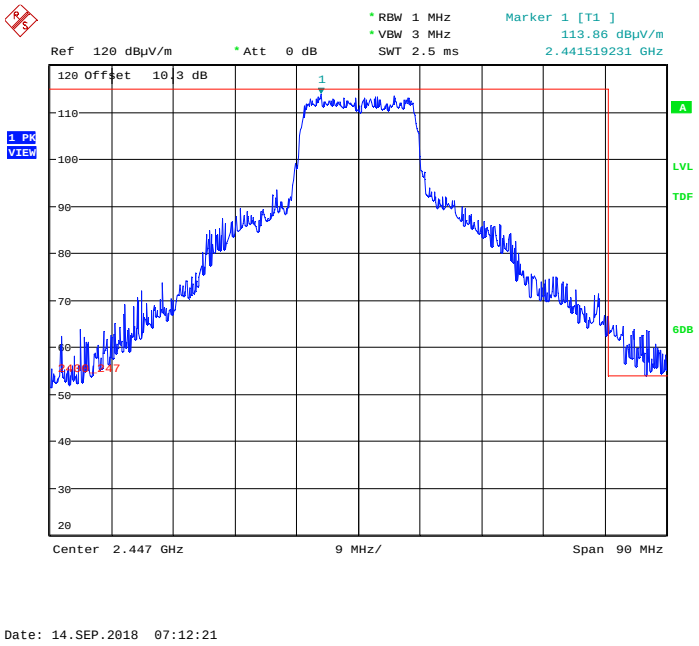
Plot 5.4.4.1.4.135. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 30, Channel 4, 2427 MHz



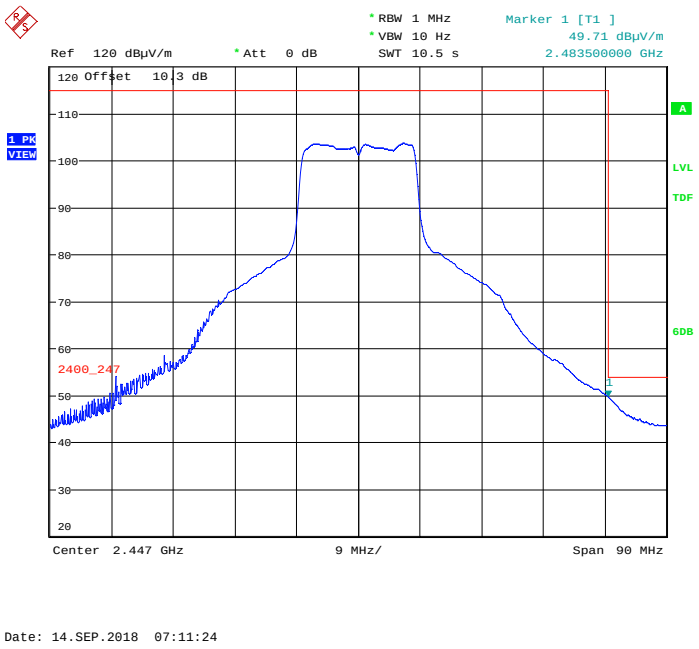
Plot 5.4.4.1.4.136. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 30, Channel 4, 2427 MHz



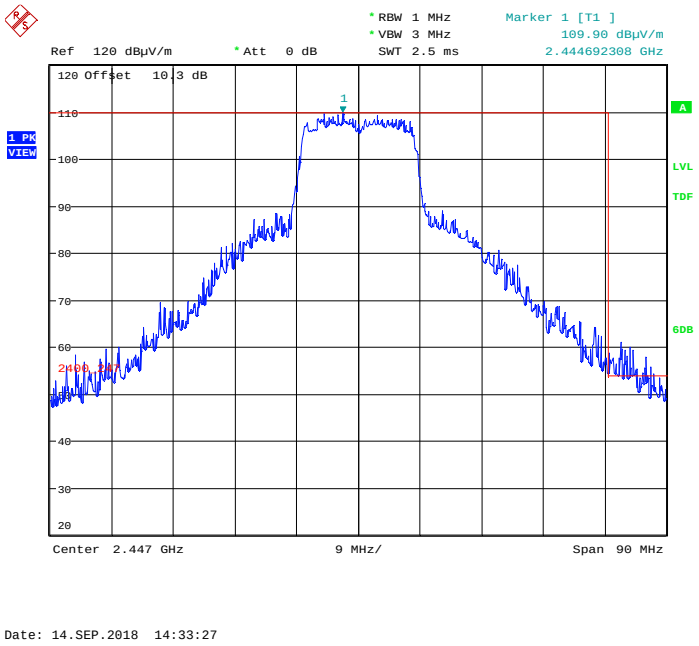
Plot 5.4.4.1.4.137. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 28, Channel 8, 2447 MHz



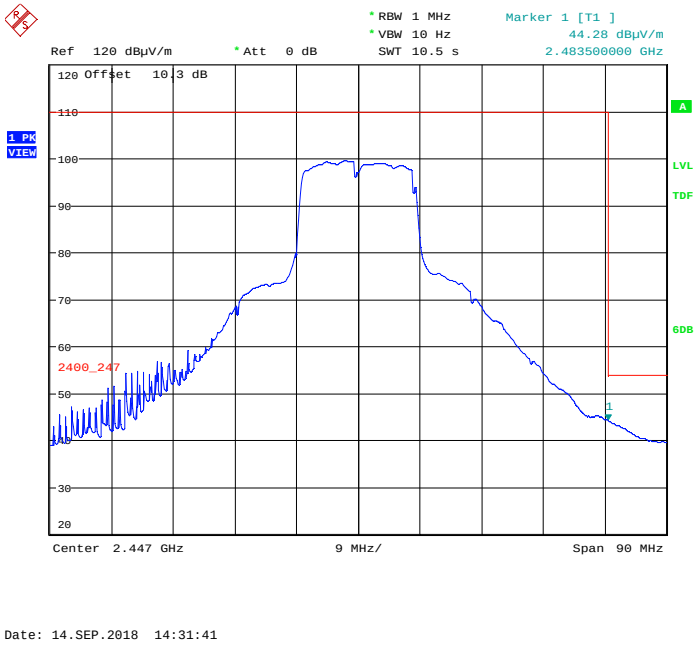
Plot 5.4.4.1.4.138. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 28, Channel 8, 2447 MHz



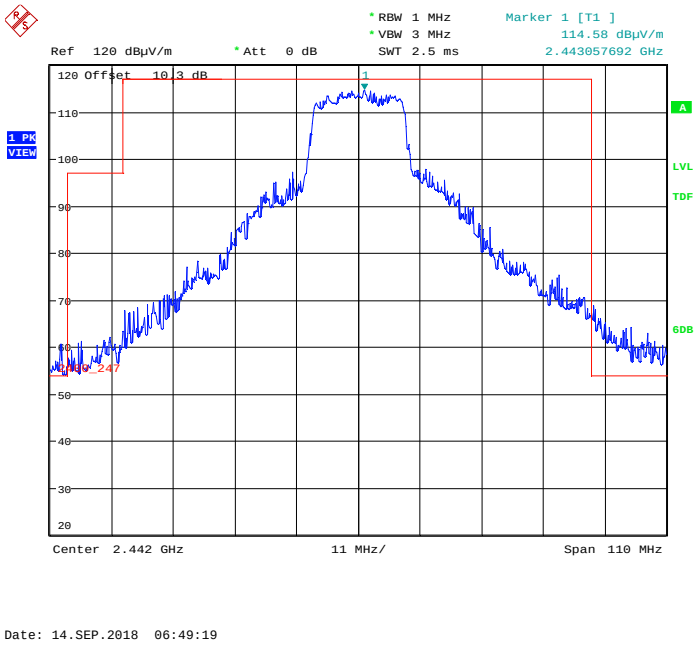
Plot 5.4.4.1.4.139. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 28, Channel 8, 2447 MHz



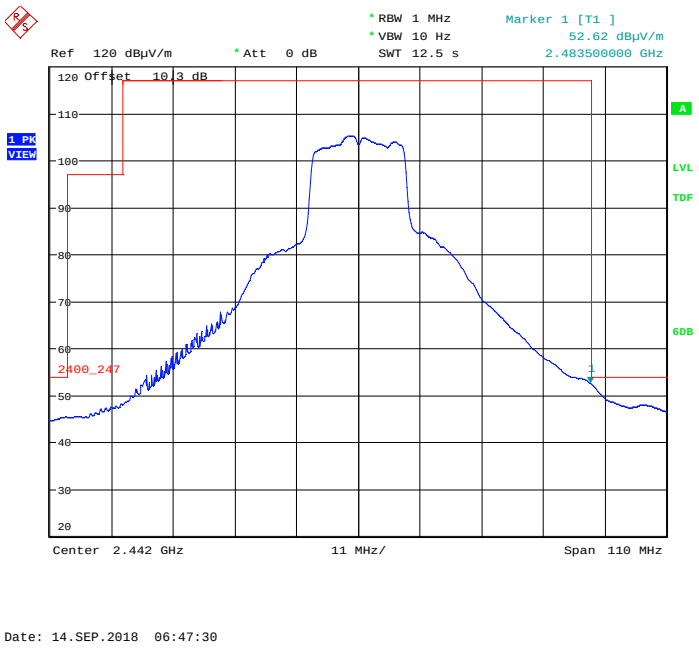
Plot 5.4.4.1.4.140. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 28, Channel 8, 2447 MHz



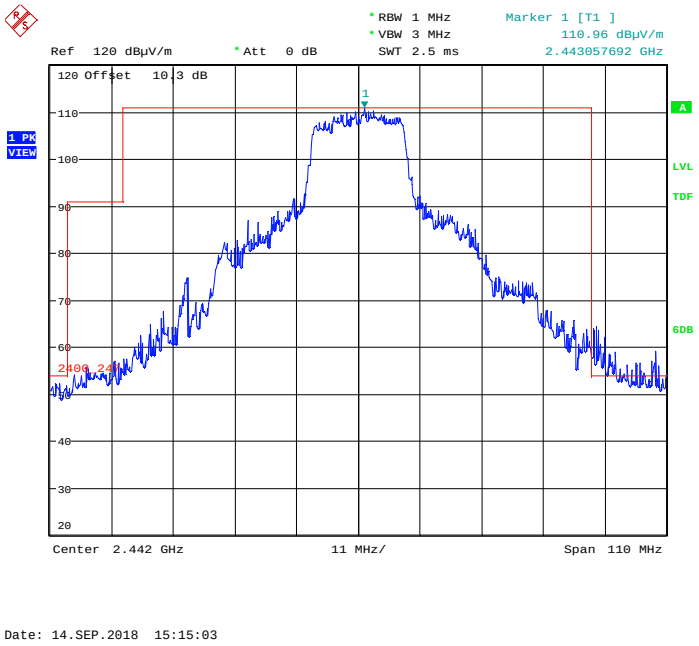
Plot 5.4.4.1.4.141. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Peak
54 Mbps 64-QAM, Power Setting 30, Channel 7, 2442 MHz



Plot 5.4.4.1.4.142. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, Average
54 Mbps 64-QAM, Power Setting 30, Channel 7, 2442 MHz



Plot 5.4.4.1.4.143. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Peak
54 Mbps 64-QAM, Power Setting 30, Channel 7, 2442 MHz



Plot 5.4.4.1.4.144. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, Average
54 Mbps 64-QAM, Power Setting 30, Channel 7, 2442 MHz